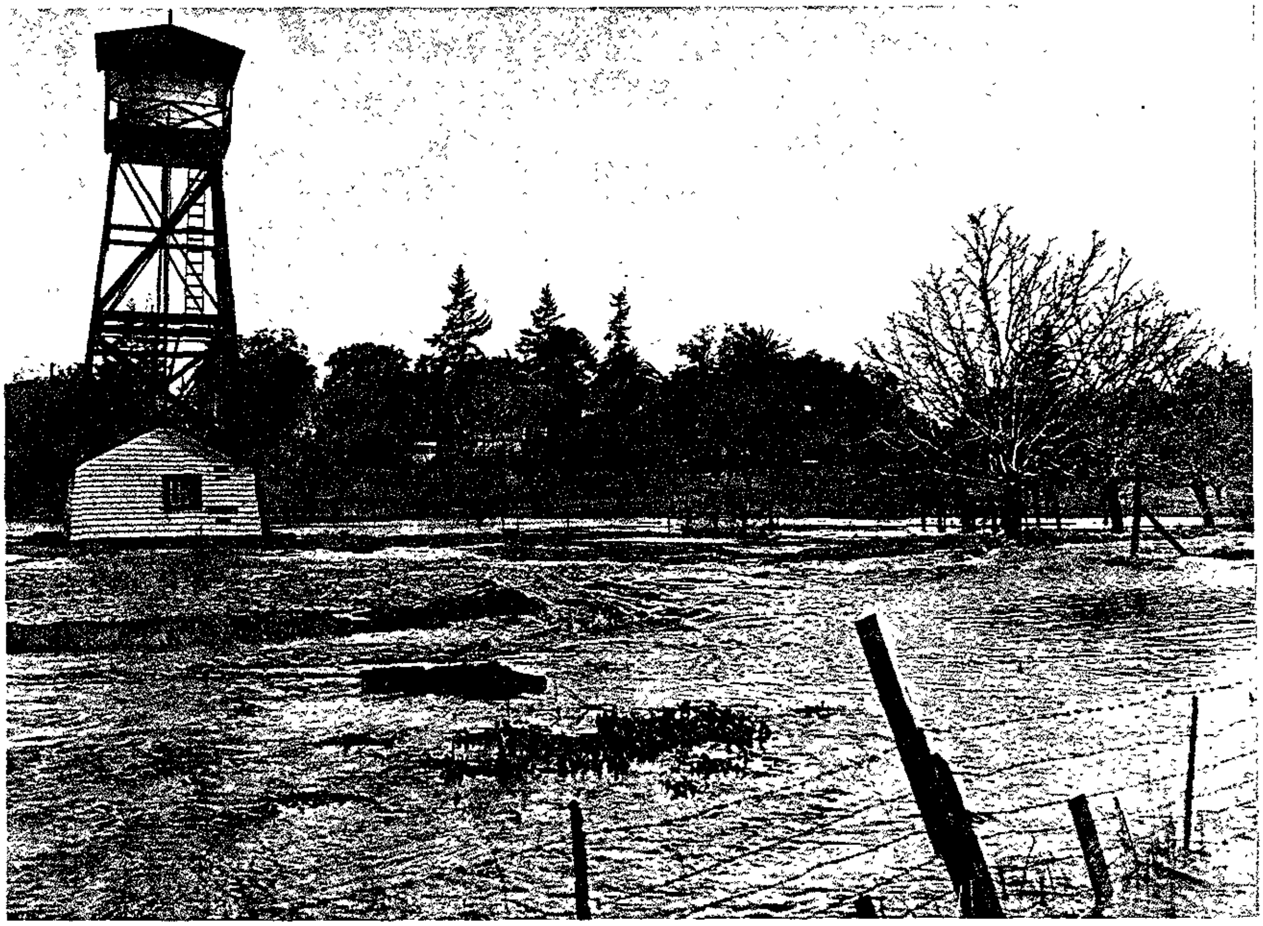
ADOBE CREEK

WATERSHED PLANNING STUDY
EL CAMINO REAL TO UPSTREAM OF MOODY ROAD

consisting of the
ENGINEER'S REPORT
and
FINAL
ENVIRONMENTAL IMPACT REPORT



MAY 1999
Santa Clara Valley Water District

SW

Santa Clara Valley Water District

NONAGENDA MATERIAL
MAY 11 1999

MEMORANDUM

FC 14A (10-31-97)

TO: Board of Directors

FROM: Nai Hsueh

SUBJECT: Adobe Creek Engineer's Report

DATE: May 3, 1999

Attached is the Engineer's Report and final Environmental Impact Report (bound together) for the Adobe Creek Watershed Planning Study.

The report is being distributed as a nonagenda item so the Board can have additional time for review.

The report will be on the Board's calendar in the near future, at which time the Board will be requested to set a date for a public hearing on the Engineer's Report.

Group Manager
Water Resources Management

Attachment

cc: N. Hsueh, R. Talley, D. Hook, K. Uyeda, S. Wilson

SW:fd

CT0503b

TC425A36A31999c.1

SANTA CLARA VALLEY WATER DISTRICT

ADOBE CREEK WATERSHED PLANNING STUDY

ENGINEER'S REPORT

Project No. 1010

Engineer's Report Prepared by Flood Management Policy and Planning Unit

Scott Wilson, P. E.	Associate Civil Engineer
Shaikh E. Buksh	Assistant Engineer II
Maria Matthews	Engineering Technician II
Randall R. Talley, P. E.	Supervising Engineer

(Environmental Impact Report—Bound Separately)
Prepared Under the Direction of the

Environmental Resources Management Unit

Terrence A. Neudorf	Environmental Planner II
Vickie Germany	Environmental Planner II

Nai Hsueh
Water Resources Manager
Water Resources Management

Stanley M. Williams	P. Kay Whitlock
General Manager	Assistant General Manager

MAY 1999

DISTRICT BOARD OF DIRECTORS

Rosemary C. Kamei	District 1	Gregory A. Zlotnick, Vice Chair	District 5
Joe Judge	District 2	Tony Estremera	At Large
Robert W. Gross, Ph.D.	District 3	Sig Sanchez	At Large
Larry Wilson, Chair	District 4		

R7057

ACKNOWLEDGMENTS

This document was prepared with assistance from:

Jeffrey A. Micko, P.E.	Associate Civil Engineer
Stephen W. Smith, P.E.	Assistant Civil Engineer
Kenneth P. Reiller, P.E.	Associate Civil Engineer
Rechelle R. Blank, P.E.	Associate Civil Engineer
Peter A. Sheydayi, P. E.	Associate Civil Engineer
William E. Tucker	Drafting Supervisor
Suzanne M. Leach	Engineering Technician
Carole A. Mensing	Engineering Technician

TABLE OF CONTENTS

Page

ACKNOWLEDGMENTS i

PREFACE xi

CHAPTER 1—SUMMARY 1-1
  STUDY OVERVIEW 1-1
  GOALS AND OBJECTIVES OF THE SANTA CLARA VALLEY WATER DISTRICT . . . 1-1
    General Objectives 1-1
    Water Quality Objectives 1-1
    Water Supply Objectives 1-1
    Flood Damage Reduction Objectives 1-3
  BACKGROUND 1-3
  PROBLEM DEFINITION 1-3
  INTEGRATED WATER RESOURCES MANAGEMENT PROGRAMS IN THE ADOBE CREEK WATERSHED 1-4
  FLOOD PROTECTION PROJECT ELEMENTS 1-5
    Proposed Capital Improvement Measures 1-6
    Community Involvement 1-7
    Significant Environmental Impacts and Mitigation 1-8
    Project Cost and Financing 1-8
    Construction Staging 1-8

CHAPTER 2—WATERSHED STUDY BACKGROUND 2-1
  WATERSHED DESCRIPTION 2-1
  WATERSHED HYDROLOGY 2-1
  PREVIOUS ENGINEERING STUDIES AND CONSTRUCTION 2-5
  ADOBE CREEK RESTORATION PLAN 2-6
  GEOLOGICAL AND HYDROGEOLOGICAL SETTING 2-7
  HISTORIC STREAM CHANNEL 2-8
  HISTORIC LAND SUBSIDENCE 2-8
  ENVIRONMENTAL SETTING 2-11
  CULTURAL RESOURCES 2-11

CHAPTER 3—PROBLEM DEFINITION 3-1
  WATER QUALITY PROBLEMS 3-1
  HISTORIC FLOODING PROBLEMS 3-16
  RECENT FLOODING PROBLEMS 3-16
  DESCRIPTION OF THE 1 PERCENT FLOOD 3-25
  MAINTENANCE CONCERNS 3-31
  EROSION AND SEDIMENT PROBLEMS 3-36
  LOCAL DRAINAGE PROBLEMS 3-36

CHAPTER 4—INTEGRATED WATER RESOURCES MANAGEMENT PROGRAMS IN THE ADOBE CREEK WATERSHED 4-1
  SANTA CLARA VALLEY WATER DISTRICT 4-1

Page
Flood Damage Reduction Program 4-1
Adopt-A-Creek Program 4-1
Santa Clara Valley Urban Runoff Pollution Prevention Program 4-2
Groundwater Protection Programs 4-3
Environmental Programs 4-4
Environmental Compliance Programs 4-5
Design Coordination Programs 4-6
Water Supply Program 4-7
CITY OF PALO ALTO 4-7
General Plan 4-7
Palo Alto Municipal Code Provisions 4-7
CITY OF LOS ALTOS 4-8
Los Altos Municipal Code Chapter 8—Stream Protection and Preservation 4-9
Los Altos General Plan Chapter 9—Natural Environment and Hazards 4-9
Resolution 93-36—Amending Los Altos General Plan Chapter 9—Natural Environment and Hazards 4-10
TOWN OF LOS ALTOS HILLS 4-10
SANTA CLARA COUNTY 4-11
STATE REGULATIONS 4-11
Streambed Alteration Agreements: California Fish and Game Code Section 1601/1603 . 4-11
California State Water Resources Control Board 4-11
FEDERAL REGULATIONS 4-12
The Rivers and Harbors Act 4-12
Fish and Wildlife Coordination Act 4-12
Endangered Species Act (Section 7) 4-13
Clean Water Act 4-13
Coastal Zone Act Reauthorization Amendments of 1990 4-14
National Historic Preservation Act (Section 106) 4-14

CHAPTER 5—FLOOD PROTECTION PROJECT ELEMENTS 5-1
STUDY AREA 5-1
FORMULATION OF ALTERNATIVES 5-3
Engineering Criteria 5-3
ALTERNATIVES FEASIBILITY AND THEIR SIGNIFICANT IMPACTS 5-5
"No Project" Alternative 5-6
Upstream Reservoirs Alternatives 5-7
Nonstructural Plan 5-11
ALTERNATIVE SOLUTIONS BY REACH 5-11
El Camino Real to Upstream Alta Mesa Cemetery (Reaches 1-2) 5-11
Upstream Alta Mesa Cemetery to Foothill Expressway (Reaches 3-4) 5-17
Foothill Expressway to West Edith Avenue (Reach 5) 5-20
West Edith Avenue to Burke Road (Reach 6) 5-35
Burke Road to O'Keefe Lane (Reaches 7-8) 5-36
O'Keefe Lane to Interstate 280 (Reach 9) 5-39
Interstate 280 to El Monte Road (Reaches 10-11) 5-42
El Monte Road to Tepa Way (Reach 12) 5-53
Tepa Way to Rhus Ridge Road (Reach 13) 5-55
Rhus Ridge Road to Francemont Avenue (Reach 14) 5-58

Page

Francemont Avenue to Murietta Lane (Reach 15) 5-58
Murietta Lane to Upstream Moody Road (Reach 16) 5-58
COMMUNITY INVOLVEMENT 5-60
PROJECT SELECTION 5-61
Summary of Selected Alternatives 5-64

CHAPTER 6—EROSION CONTROL PROJECT ELEMENTS 6-1
GOAL OF THE EROSION CONTROL PROJECT 6-1
EROSION SITE SELECTION 6-1
EROSION SITE REPAIR CRITERIA AND METHODS 6-2
EROSION SITE REPAIR IMPACTS AND MITIGATION 6-3

CHAPTER 7—DESCRIPTION OF THE RECOMMENDED PROJECT 7-1
STORMWATER IMPACTS AND MITIGATION DURING CONSTRUCTION 7-2
BMP for Scheduling 7-2
BMP for Temporary Stream Crossings 7-2
BMP for Preserving Existing Vegetation 7-3
BMP for Dust Control 7-3
BMP for Construction Road Stabilization 7-4
BMP for Stabilized Construction Entrance 7-4
BMP for Temporary Drains and Swales 7-4
REACH 1: EL CAMINO REAL TO HETCH HETCHY PIPELINE 7-5
Proposed Measures 7-5
Construction Procedures 7-8
Impacts 7-12
Mitigation 7-14
Monitoring 7-15
Costs 7-15
REACH 2: HETCH HETCHY PIPELINE TO UPSTREAM ALTA MESA CEMETERY . . 7-16
Proposed Measures 7-16
Construction Procedures 7-17
Impacts 7-18
Mitigation 7-18
Monitoring 7-18
Costs 7-18
REACH 3: UPSTREAM ALTA MESA CEMETERY TO YERBA BUENA AVENUE 7-19
Proposed Measures 7-19
Construction Procedures 7-21
Impacts 7-21
Mitigation 7-22
Monitoring 7-22
Costs 7-22
REACH 4: YERBA BUENA AVENUE TO FOOTHILL EXPRESSWAY 7-23
Proposed Measures 7-23
Deferred Measures 7-24
Construction Procedures 7-24
Impacts 7-25
Mitigation 7-25

Monitoring 7-25
Costs 7-25
REACH 5: FOOTHILL EXPRESSWAY TO WEST EDITH AVENUE 7-26
Proposed Measures 7-26
Construction Procedures 7-27
Impacts 7-30
Mitigation 7-31
Monitoring 7-31
Costs 7-31
REACH 6: WEST EDITH AVENUE TO BURKE ROAD 7-32
Proposed Measures 7-32
REACH 7: BURKE ROAD TO MANRESA WAY 7-33
Proposed Measures 7-33
Construction Procedures 7-35
Impacts 7-35
Mitigation 7-35
Monitoring 7-36
Costs 7-36
REACH 8: MANRESA WAY TO O'KEEFE LANE 7-37
Proposed Measures 7-37
Construction Procedures 7-38
Impacts 7-38
Mitigation 7-38
Monitoring 7-39
Costs 7-39
REACH 9: O'KEEFE LANE TO INTERSTATE 280 7-40
Proposed Measures 7-40
Construction Procedures 7-42
Impacts 7-42
Mitigation 7-42
Monitoring 7-43
Costs 7-43
REACH 10: INTERSTATE 280 TO THE FOOTHILL COLLEGE ENTRANCE ROAD . . 7-44
Proposed Measures 7-44
REACH 11: FOOTHILL COLLEGE ENTRANCE ROAD TO EL MONTE ROAD 7-45
Proposed Measures 7-45
Possible Project Variation 7-46
Construction Procedures 7-46
Impacts 7-49
Mitigation 7-50
Monitoring 7-50
Costs 7-50
REACH 12: EL MONTE ROAD TO TEPA WAY 7-51
Proposed Measures 7-51
Construction Procedures 7-52
Impacts 7-52
Mitigation 7-53
Monitoring 7-53

Page

Costs 7-53
REACH 13: TEPA WAY TO RHUS RIDGE ROAD 7-54
Proposed Measures 7-54
Construction Procedures 7-56
Deferred Measures 7-56
Impacts 7-56
Mitigation 7-56
Monitoring 7-57
Costs 7-57
REACH 14: RHUS RIDGE ROAD TO FRANCEMONT AVENUE 7-58
Proposed Measures 7-58
REACH 15: FRANCEMONT AVENUE TO MURIETTA LANE 7-59
Proposed Measures 7-59
REACH 16: MURIETTA LANE TO END OF PROJECT 7-60
Proposed Measures 7-60

CHAPTER 8—MAINTENANCE PROGRAM 8-1
MAINTENANCE ACTIVITIES 8-1
Erosion Protection 8-2
Preventative Slope Protection 8-2
Remedial Slope Protection 8-7
Vegetation and Sediment Removal 8-25
MAINTENANCE ACTIVITIES OUTLINED BY REACH 8-25
Reaches 1 to 4 (El Camino Real to Foothill Expressway) 8-25
Reaches 5 to 6 (Foothill Expressway to Burke Road) 8-26
Reaches 7 to 9 (Burke Road to Interstate 280) 8-26
Reaches 10 to Entrance of Bypass Channel 8-26
Entrance of Bypass Channel to End of the District's Jurisdiction 8-26
MAINTENANCE STANDARDS 8-27

CHAPTER 9—PROJECT COST, FINANCING, AND STAGING 9-1

CHAPTER 10—CONCLUSIONS AND RECOMMENDATIONS 10-1

TABLES

Page

TABLE 1.1 Summary of Vegetation Impacts and Mitigation Requirements 1-8
TABLE 1.2 Adobe Creek Capital Improvement Project Cost Summary by Study Reach 1-9
TABLE 2.1 Peak Flood Flows Adobe Creek Watershed 2-5
TABLE 3.1 Mean Average Annual Wet Weather Loads by Watershed 3-5
TABLE 3.2 Adobe Creek Storm Drain Outfalls 3-7
TABLE 3.3 Summary of Analytical Test Results of Creekbed Sediment Testing on Adobe Creek 3-11
TABLE 3.4 Summary of Typical Metals Concentrations and Standards 3-13
TABLE 3.5 Adobe Creek—Design Flows and Existing Culvert/Bridge Capacities 3-29
TABLE 3.6 Waterways Management Model 1 Percent Flood Damage Report 3-30
TABLE 4.1 Ordinance 83-2 Violations Reported and Acted on by District During the Year 1993 4-6
TABLE 5.1 Adobe Creek Study Reaches 5-1
TABLE 5.2 Adobe Creek Design Flow Rates 5-4
TABLE 5.3 Adobe Creek Design Channel Roughness Factors 5-4
TABLE 5.4 No Project Alternative Summary 5-7
TABLE 5.5 Summary of Feasible Alternatives—Reaches 1 and 2 5-16
TABLE 5.6 Summary of Feasible Alternatives—Reaches 3 and 4 5-19
TABLE 5.7 Summary of Feasible Alternatives—Reach 5 5-32
TABLE 5.8 Summary of Feasible Alternatives—Reaches 6, 7, and 8 5-38
TABLE 5.9 Summary of Feasible Alternatives—Reach 9 5-41
TABLE 5.10 Summary of Feasible Alternatives—Reaches 10 and 11 5-51
TABLE 5.11 Summary of Feasible Alternatives—Reach 12 5-54
TABLE 5.12 Summary of Feasible Alternatives—Reach 13 5-57
TABLE 5.13 Summary of Feasible Alternatives—Reaches 14, 15, and 16 5-59
TABLE 5.14 Summary of Selected Alternatives 5-65
TABLE 5.15 Summary Table for Adobe Creek Flood Control Construction Cost and Vegetation Impact Acreage 5-71
TABLE 6.1 Proposed Erosion Repair and Vortex Rock Weir Sites 6-4
TABLE 7.1 Noise Levels from Construction Equipment 7-13
TABLE 8.1 Summary of Remedial Slope Protection Methods 8-21
TABLE 8.2 Adobe Creek—El Camino Real to End of Project Maintenance Standards for Vegetation and Sediment Removal 8-28
TABLE 9.1 Adobe Creek Capital Improvement Project—Construction Staging 9-2

FIGURES

Page

FIGURE 1.1 Adobe Creek Watershed Map 1-2
FIGURE 2.1 Adobe Creek Northwest Zone Map 2-2
FIGURE 2.2 Adobe Creek Project Location Map 2-3
FIGURE 2.3 Adobe Creek Watershed Land Use Map 2-4
FIGURE 2.4 Adobe Creek Historic Stream Channel in 1876 2-9
FIGURE 2.5 Historic Land Subsidence 2-10
FIGURE 2.6 Adobe Creek Existing Conditions Photographs 2-12
FIGURE 3.1 Fuel Leak Sites Within the Adobe Creek Watershed 3-2
FIGURE 3.2 Point Versus Nonpoint Source Loads 3-3
FIGURE 3.3 Adobe Creek Sediment Sampling Locations 3-10
FIGURE 3.4 Concentrations of Copper and Zinc in Creekbed Sediments 3-14
FIGURE 3.5 Annual Average Atmospheric Lead Concentration for San Jose 3-15
FIGURE 3.6 Number of Wells Drilled Between 1975-1992 in Los Altos Hills 3-15
FIGURE 3.7 Total Number of Wells in Los Altos Hills Between 1975-1992 3-16
FIGURE 3.8 Photographs Flooding on Adobe Creek 3-17
FIGURE 3.9 Adobe Creek Flooding—January 1983 3-20
FIGURE 3.10 Adobe Creek Flooding—March 1983 3-21
FIGURE 3.11 Adobe Creek Flooding—March 1983 3-22
FIGURE 3.12 Adobe Creek Flooding—January 1995 3-23
FIGURE 3.13 Adobe Creek Flooding—February 1998 3-24
FIGURE 3.14 Adobe Creek 1 Percent Floodmap 3-26
FIGURE 3.15 Adobe Creek Erosion Repair and Sediment Removal Projects 3-32
FIGURE 3.16 Erosion, Sedimentation, and Maintenance Examples for Adobe Creek 3-37
FIGURE 5.1 Adobe Creek Project Location and Reach Map 5-2
FIGURE 5.2 Adobe Creek Reservoir Sites 5-8
FIGURE 5.3 Adobe Creek Reservoir Sites 5-10
FIGURE 5.4 Palo Alto Gateway Plan 5-12
FIGURE 5.5 Reach 1 Feasible Alternatives 5-14
FIGURE 5.6 Reaches 1-16 Maintenance Easement Corridor Typical 5-15
FIGURE 5.7 Reach 4 Feasible Alternatives 5-18
FIGURE 5.8 Reach 5 Feasible Alternatives 5-25
FIGURE 5.9 Reach 5 Feasible Alternatives 5-26
FIGURE 5.10 Reach 5 Feasible Alternatives 5-27
FIGURE 5.11 Reach 5 Feasible Alternatives 5-28
FIGURE 5.12 Reach 5 Feasible Alternatives 5-29
FIGURE 5.13 Reach 5 Feasible Alternatives 5-30
FIGURE 5.14 Adobe Creek Restoration Plan—Proposed Plan Downstream of West Edith Avenue 5-31
FIGURE 5.15 Reach 7 Feasible Alternatives 5-37
FIGURE 5.16 Reach 9 Feasible Alternatives 5-40
FIGURE 5.17 Reach 11 Feasible Alternatives 5-47
FIGURE 5.18 Reach 11 Feasible Alternatives 5-48
FIGURE 5.19 Reach 11 Feasible Alternatives 5-49
FIGURE 5.20 Reach 11 Feasible Alternatives 5-50

Page

FIGURE 5.21 Reach 13 Feasible Alternatives 5-56
FIGURE 6.1 Photographs of Typical Erosion Sites 6-7
FIGURE 7.1 Reach 1 Recommended Project 7-6
FIGURE 7.2 Reaches 1-16 Maintenance Easement Corridor Typical 7-9
FIGURE 7.3 Reach 5 Recommended Project—Foothill Expressway 7-28
FIGURE 7.4 Reach 5 Recommended Project—Downstream of West Edith Avenue 7-29
FIGURE 7.5 Reach 7 Recommended Project 7-34
FIGURE 7.6 Reach 9 Recommended Project 7-41
FIGURE 7.7 Reach 11 Recommended Project 7-47
FIGURE 7.8 Reach 11 Proposed Project Option 7-48
FIGURE 7.9 Reach 13 Recommended Project 7-55
FIGURE 8.1 Erosion Conditions 8-3
FIGURE 8.2 Preventative Erosion Solution 8-4
FIGURE 8.3 Vortex Rock Weir 8-5
FIGURE 8.4 Vortex Rock Weir 8-6
FIGURE 8.5 Contour Wattling 8-9
FIGURE 8.6 Brush Layering 8-9
FIGURE 8.7 Bank Surface Matting 8-10
FIGURE 8.8 Root Wads and Boulders 8-12
FIGURE 8.9 Root Wads and Boulders 8-13
FIGURE 8.10 Soil Cellular Confinement System (Geocell) 8-14
FIGURE 8.11 Rock Riprap 8-16
FIGURE 8.12 Gabions 8-16
FIGURE 8.13 Gabion Planting Box Section 8-17
FIGURE 8.14 Gabion Planting Box Detail 8-17
FIGURE 8.15 Articulated Concrete Block (ACB) 8-19
FIGURE 8.16 Cribwalls 8-19
FIGURE 8.17 Sacked Concrete 8-20
FIGURE 8.18 Gunite 8-20
FIGURE 8.19 Slope Cutback 8-23
FIGURE 8.20 No Slope Cutback 8-23
FIGURE 8.21 Channel Bottom Realignment 8-24

PLATES

Sheet

Title Sheet and Location Map 1
Index Map, Abbreviations, and Legend 2
Plan and Profile Sheets 3-31
Typical Sections 32-44
Detail Sheet 45
Box Culvert Bypass Alternative S1-S3

The base maps included in this report are provided at the courtesy of the County of Santa Clara, California which reserves all rights in the material

Copyright 1982, County of Santa Clara, California.

APPENDICES

APPENDIX A List of Technical Terms and Acronyms

APPENDIX B Persons to Contact for More Information

APPENDIX C Organizations and Persons Contacted During Preparation of This Report

APPENDIX D Bibliography

APPENDIX E National Flood Insurance Program

APPENDIX F Detailed Cost Estimate

APPENDIX G Adobe Creek Watershed Real Estate Program

APPENDIX H The 1 Percent Flood

APPENDIX I Adobe Creek Hydrology

APPENDIX J Santa Clara Valley Water District Ordinance 83-2 (as amended 10/22/85)

APPENDIX K Santa Clara Valley Water District Bridge Construction Cost Sharing Policy

APPENDIX L District Policy for Flood Control Maintenance of Private Property

APPENDIX M Sediment Testing Report

APPENDIX N Memorandum of Understanding with California Department of Fish and Game for Routine Maintenance Activities in Improved and Unimproved Channels

APPENDIX O Board of Directors Agenda Items Regarding Environmental Impact Report and Engineer's Report

PREFACE

Before the Santa Clara Valley was urbanized, extensive riparian vegetation occurred along Adobe Creek and its tributaries. The banks of the creeks in the upper watershed, subject to periodic overbank flooding, supported a diverse and biologically rich habitat. As development increased in the valley, the overall extent and condition of existing riparian vegetation and its habitat value were reduced. The floodplain terraces, once dominated by riparian habitat, were first converted to agricultural use then urban development.

Activities associated with urban development such as leaking underground storage tanks, industrial spills, land alteration, polluted urban runoff, and nonpoint source pollution have contributed to the degradation of the water quality in the Adobe Creek Watershed.

Flooding is another threat in the Adobe Creek Watershed. Significant floods have occurred in the Santa Clara Valley frequently since 1889. The most significant of the floods that affected Adobe Creek were in 1955, 1983, 1986, 1995, and 1998.

This report presents the water resource related problems in the Adobe Creek Watershed. Watersheds are the most logical area at which actions should be taken to investigate water resource related problems, as most natural events and economic activities affect the quality of water resources principally within watershed boundaries. There are various ongoing integrated water resources management programs, both of the Santa Clara Valley Water District (District) and by others, in the watershed that address water resource related problems.

In the lower portion of Adobe Creek (downstream of El Camino Real), the creek was channelized in the 1950s to protect agriculture and development in the floodplain. Most of the upper portion of the creek (upstream of El Camino Real), has never been channelized. The creek has problems such as: localized flooding, creekbank erosion, failing channel stabilization structures, sedimentation, and insufficient maintenance access. This report proposes a capital improvement project for Adobe Creek upstream of El Camino Real. Based on the District's integrated water resources planning process, a variety of alternatives that would best satisfy all the objectives of the District were evaluated. The recommended project was chosen from among all alternatives because it would best reduce damages from the 1 percent flood, improve water quality in the creek, reduce erosion problems, improve maintenance access, reduce sedimentation problems, provide fish passage and a riparian corridor for wildlife habitat in areas of channel modification, and is a consensus of the cities, town, and community. This project consists of limited channel modifications, creekbank erosion repairs, and a new maintenance program.

This report is prepared in accordance with the District Act which requires an Engineer's Report for projects that are to be funded with District revenues. It complies with the California Environmental Quality Act (CEQA) which requires an Environmental Impact Report (EIR) for any project which may have a significant impact. On the basis of the initial study, it has been found that the proposed capital improvement project may have significant effects on the environment and would require preparation of an EIR. The EIR has been prepared and is bound separately from this document.

The summary chapter that follows offers an overview of the flooding, erosion, and other problems associated with the Adobe Creek Watershed and the proposed solutions to these problems. The environmental impacts and mitigation program are also summarized. Those interested in more detailed information should read the remainder of the report and the accompanying appendices.

A list of technical terms and acronyms is found in Appendix A. Appendix B lists people to contact at the District for more information concerning this study.

CHAPTER 1
SUMMARY

STUDY OVERVIEW

This Engineer's Report presents the existing water resource related problems, including water quality and potential flooding, in the Adobe Creek Watershed (shown on Figure 1.1). Adobe Creek downstream of El Camino Real has been improved to the 100-year level of protection, solving most flooding and ancillary problems, such as erosion and sedimentation. This report includes the results of an investigation of the existing and potential flooding, erosion, and sedimentation problems on Adobe Creek upstream of El Camino Real to the Hidden Villa Trust Property on Moody Road, a distance of approximately 7½ miles. This report includes a discussion of the alternative solutions analyzed, a recommended capital improvement project, and summarizes the environmental impacts and mitigation required. The proposed project EIR bound separately from this report contains a more detailed discussion of the environmental impacts and mitigation.

GOALS AND OBJECTIVES OF THE SANTA CLARA VALLEY WATER DISTRICT

It is the goal of the District: to provide a supply of water, adequate in both quantity and quality, needed to meet the desired quality of life in the community; to provide protection against flooding in a manner that maintains the desired quality of life in the community; and to coordinate all other community water related programs to achieve full water management.

These goals are met through a series of objectives that direct the activities of the District.

General Objectives

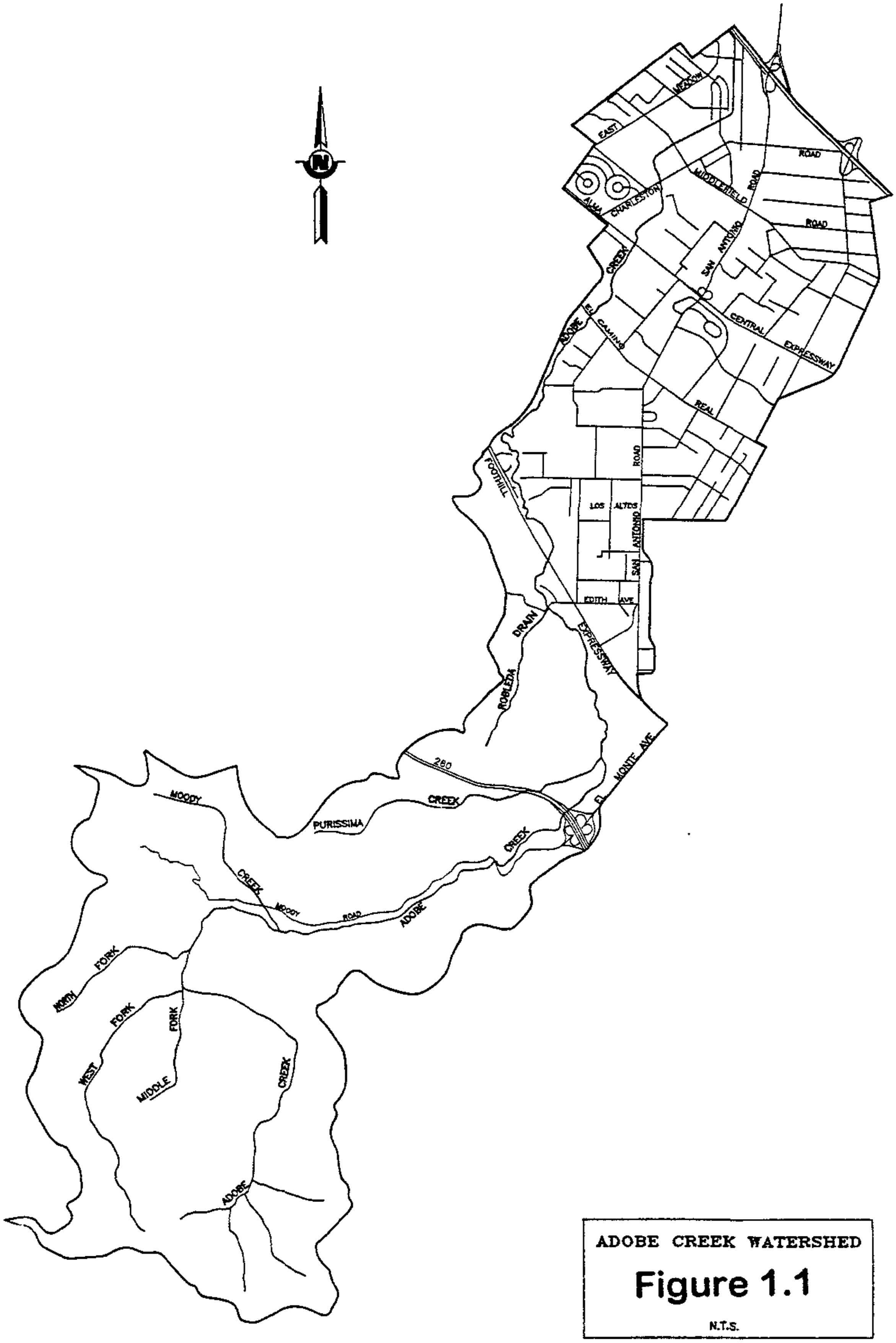
- Consider the desires of the community in all District programs and projects.
- Protect the environment and the economic well-being of the community in the formulation and execution of District programs and projects.
- Provide environmental impact mitigation measures, such as revegetating District projects, as appropriate.

Water Quality Objectives

- Improve and protect water quality in the streams of the Santa Clara Valley in order to protect the beneficial uses of the streams, the groundwater basin, and the San Francisco Bay.

Water Supply Objectives

- Optimize conservation of all water resources.
- Ensure optimal primary usage of local water resources with adequate importation of supplemental supplies.



ADOBE CREEK WATERSHED

Figure 1.1

N.T.S.

- Plan for alternative supplemental water supplies, where feasible, including reclamation of waste water.
- Preserve and protect the local watersheds and groundwater basin.
- Preserve and enhance water quality, both surface and underground.

Flood Damage Reduction Objectives

- Provide flood protection by management of the natural floodplain or of a modified floodplain, using the more structural types of channel modification only where other measures are impractical.
- Give priority to protection against flooding of developed areas, with the areas of greatest potential damage having the highest priorities.
- Encourage proper controls to prevent incompatible land uses in areas subject to flooding.
- Discourage future land use practices which will subject existing urban areas to additional flooding.
- Ensure that channel modification measures taken to assist an area shall not induce flooding upon any other area.
- Maintain District facilities to ensure they continue to provide the level of flood protection for which they were constructed, both to protect the public's investment and to comply with regulations of the federal flood insurance program.

BACKGROUND

The Adobe Creek watershed is 10 square miles in size and is located in northwestern Santa Clara County. The creek flows for 14.7 miles within the city limits of Palo Alto, Mountain View, Los Altos, and in the Town of Los Altos Hills. The Creek originates in the northeasterly slopes of the Santa Cruz mountains near Monte Bello Ridge. No reservoirs have been built on Adobe Creek and its only major tributary is Purissima Creek.

Much of Adobe Creek, upstream of El Camino Real, is privately owned with property lines extending to the center of the creek. The District currently has rights of way on 110 of the 254 properties (43 percent) that border the creek.

PROBLEM DEFINITION

The major problems in the Adobe Creek watershed are the threat of water quality degradation, the magnitude of potential flood damage to properties along the creek, and the extreme channel maintenance requirements.

In recent years, activities related to development, such as agricultural activities, industrial spills, transportation activities, leaking underground storage tanks, urban runoff, illegal dumping, and nonpoint source pollution, have threatened surface water and groundwater quality in the Adobe Creek watershed. Regulatory agencies have begun to regulate all discharges that enter creeks and into the bay.

Urbanization has had little effect on storm water runoff, but there has been an impact on the creek by development encroaching into the floodplain and the creek itself. When areas adjacent to the creek were developed, proper setbacks were not observed and the natural erosive action of the creek and its floodwaters now threaten bordering properties. In addition, encroachments and bridge structures have altered natural creekbed gradients.

Adobe Creek has a long history of flooding. Prior to the turn of the century, the creek was a well-defined channel that meandered down a gently sloping alluvial fan flattening out and losing definition as it approached San Francisco Bay. This study reach is a well-defined channel on an alluvial slope. Historic flooding in this area occurred as overbanking, with any overflow continuing along the channel course.

Flood damages did occur in 1952, 1955, 1983, 1986, 1995, and 1998. Approximately 220 structures would be impacted by a 1 percent flood with estimated damages of $2.7 million. Over the long-term, average annual flood damages would be about $110,300. Flood damages can occur as often as every 3 years. Of the 19 street culverts within the study limits, 11 are inadequate. The inadequate culverts have capacity to convey only flows ranging from 5- to 50-year flood (20 percent to 2 percent probability of exceedance).

There have been many places where changes have been made in the creek channel alignment. In all cases the creek was moved from a meandering alignment across a historic floodplain to a straightened channel at the edge of a development

Approximately ⅓ to ½ of the creek upstream of El Camino Real has the capacity to contain the 1 percent flood. However, in areas where capacity is adequate, there remains a potential for erosion damage which threatens adjacent properties.

Note: Adobe Creek does not discharge directly into the San Francisco Bay. Adobe Creek along with Barron and Matadero Creeks, discharge into the Palo Alto Flood Basin, a 600-acre tidal basin that is regulated by a tide gate.

High channel maintenance expenditures have been required for sediment and debris removal, vegetation control, and erosion repair. Annual maintenance costs have been approximately $62,000.

INTEGRATED WATER RESOURCES MANAGEMENT PROGRAMS IN THE ADOBE CREEK WATERSHED

There are ongoing programs, both in the District and by others, that have been created to address the various water resource related problems in the Adobe Creek watershed.

The District is the county's wholesale water supplier and a co-permittee of the Santa Clara Valley Urban Runoff Pollution Prevention Program's (SCVURPPP) National Pollutant Discharge Elimination System

(NPDES) permit. In addition to its participation in the program, the District implements projects and programs to meet its objective of water quality protection and restoration. Some of these programs are the Adopt-A-Creek program, Groundwater Protection Program, Environmental Program, and the Environmental Compliance Program. The District has also adopted policies and ordinances to regulate and protect the water resources in Santa Clara County. Under District Ordinance 83-2, the pollution of the water supplies of the District, whether in streams, reservoirs, conduits of any kind, or groundwater, by any direct or indirect means whatever, is prohibited.

All of the 12 cities and the town in the watershed participate in the SCVURPPP with the County and the District. As co-permittees, the participants have compliance and reporting requirements they must meet. These requirements are described in the Integrated Water Resources Management Programs Chapter.

The Santa Clara County adopted the County General Plan in 1990 which seeks to protect creeks and streamside areas. It restricts development in floodplains, and requires public projects to preserve and avoid damages to the stream environment.

There are regulatory mandates that are applicable in the Adobe Creek watershed to protect the natural environment and water resources. They include obtaining a permit from the U.S. Army Corps of Engineers (Corps) to comply with Section 404 of the Federal Clean Water Act, and Sections 1601 and 1603 of the California State Fish and Game Code which requires a Streambed Alteration Agreement. Projects in the baylands require a Bay Conservation and Development Commission (BCDC) permit and all projects must comply with the SCVURPPP's NPDES permit. The permit includes: programs to address regulatory requirements, programs to protect resources and beneficial uses, and the requirements of the Regional Water Quality Control Board (RWQCB).

FLOOD PROTECTION PROJECT ELEMENTS

Santa Clara County is divided into five zones. Each zone is defined by watershed boundaries and is essentially a unique fiscal entity. All revenue generated within a zone must be spent on the construction, operation, and maintenance of facilities that benefit that zone. Adobe Creek is located in the Northwest Zone.

Flood problems within each zone are first investigated in a long-range planning context. The flood damage reduction needs are identified, assessed, and given a priority ranking on a project by project basis within each zone. The criteria used to determine the ranking include many factors, but are most heavily weighted toward projects that will prevent the greatest potential flood damage. The District has developed an integrated, multi-objective planning process that addresses flood damage reduction, erosion, sedimentation, maintenance, pollutants, recreation, and other watershed concerns. All alternative solutions are evaluated within the context of economic feasibility, environmental impact and mitigation, and community acceptability.

It is the policy of the District to design flood damage reduction projects to contain the 1 percent flood with appropriate freeboard. The 1 percent flood, the standard level of protection set by the Federal Emergency Management Agency (FEMA), the federal agency responsible for the administration of the National Flood Insurance Program (NFIP), is discussed in Appendix E. The NFIP requires flood insurance when financing, through federally backed institutions, structures located within a designated flood hazard area. Thus, it is a goal of the District, not only to reduce the flood damage potential, but to also reduce the burden of mandatory flood insurance by providing flood protection.

In a multi-objective integrated project planning process, the District evaluates a variety of alternatives that would best satisfy all the objectives of the District and community from the watershed approach. This is facilitated through the use of a Project Planning Team which generally consists of District staff from various departments and expertise. The District would also seek to integrate other projects and programs in the watershed into the proposed project.

Several alternative solutions to the flooding, erosion, and sedimentation problems have been investigated for Adobe Creek. A detailed evaluation of alternatives is provided in the Formulation of Alternatives section of the Flood Protection Project Elements Chapter.

Alternatives investigated include upstream reservoirs, off-stream storage, floodproofing, various types of channel modifications, bypass channels, and flood basins. Upstream reservoirs, off-stream storage, and floodproofing were eliminated because of excessive costs and technical infeasibility.

The proposed project was selected because it provides 1 percent flood protection, where feasible, and creek stabilization while minimizing construction and maintenance costs, and overall impacts to the community and the natural environment. The project is a combination of channel modifications, culvert replacements, and creekbank erosion repairs.

A proposed capital improvement plan for flood, erosion, and sediment control, as well as future maintenance, is presented in this report. The channel modifications include enlarging the creek channel at West Edith Avenue and Foothill College. The proposed plan includes three culvert replacements and one culvert addition. Also included in the plan are five new or upgraded maintenance access ramps, the repair of seventeen creekbank erosion sites, the installation of eight vortex rock weirs, and the modification of the entrance structure to a bypass channel. The estimated cost of the project is $8,592,000, of which $810,000 is right of way acquisition, $7,258,000 is construction related, and approximately $524,000 is for mitigation. An estimate of reach-by-reach costs are summarized in Table 1.1.

Proposed Capital Improvement Measures

The project includes a culvert replacement at El Camino Real and the improvement of the existing maintenance ramp upstream of the culvert.

The proposal includes upgrade and use of existing maintenance ramps from the Alta Mesa Cemetery property and from District property downstream of Raquel Court.

An additional culvert is proposed at Foothill Expressway.

A channel modification is proposed for 900 feet downstream of West Edith Avenue consisting of an excavated gabion/rock riprap low-flow channel, a 15-foot mid-bank bench, and a high-flow flood bench. Revegetation plantings of native trees and shrubs are planned for the channel banks, the mid-bank bench, and the edges of the flood bench.

Culvert replacements are proposed at Burke Road and O'Keefe Lane.

The channel is proposed to be modified from the Foothill College Entrance Road to El Monte Road (1,200 feet) by excavating a trapezoidal channel with buried rock and vegetation and/or by excavating a gabion/rock riprap lined low-flow channel with high-flow benches on each side of the channel. Revegetation plantings of trees and shrubs are planned for the high-flow benches and up the side of the right bank. Space for a bike/hiking trail will be left on the top of the right bank.

An improvement to the entrance structure of the Adobe Creek bypass upstream of Tepa Way, the repair of 17 erosion sites, and the installation of 8 vortex rock weirs.

The project includes a program for the acquisition of a continuous maintenance corridor and the implementation of a new maintenance program.

The replacement of two culverts at Yerba Buena Avenue and Tepa Way have been included in the proposed plans. There is no schedule for their implementation. The District would participate as a cost-shared partner if the crossing were proposed to be replaced by another party, such as a City, for structural or traffic reasons.

Community Involvement

During the course of the study, District staff has met with various homeowners, residents, businesses, and public agencies.

In an effort to address a specific problem area, it was decided to meet with the residents downstream of West Edith Avenue early in the study process. After a series of neighborhood meetings, the residents selected an underground concrete bypass culvert as their preferred alternative.

At the conclusion of the neighborhood meetings, the City of Los Altos and the Town of Los Altos Hills formed a joint committee to "find a creative, long-term solution to preserve and restore the natural Adobe Creek (with acceptable short-term land and tree loss)." District personnel presented to the committee new alternatives that utilized a widened floodplain/flood bench concept without consideration of land cost. The Committee selected the alternative that they felt best fit their objectives. This alternative, and the other alternatives considered, were presented to both city councils and the public at a meeting held in July 1993. At the conclusion of this process, the creek committee's selected alternative was selected as the District's preferred alternative.

In 1992, a presentation was made to the Foothill College Board of Trustees. At that meeting, the existing creek conditions, problems, and possible alternative solutions were presented. At a later College Board meeting, the Board approved one of the District's proposed alternatives. Since the Board's approval, the configuration of the proposed plan has changed. At a college board meeting in February 1996, the Board endorsed the current proposed plan on college property.

In January and February of 1994 a series of three public meetings were held to present the proposed project plan to the public. Each meeting covered a different portion of the 7½ mile study reach. District staff discussed the existing creek conditions; flooding, erosion, sediment and maintenance problems; and proposed alternative solutions to solve the problems. In addition, a new maintenance program was presented. The 110 people in attendance at the meetings all generally supported the proposed plan.

A public plan viewing was held in September 1995. Approximately 100 persons attended the viewing.

Significant Environmental Impacts and Mitigation

The impacts and mitigation acreages for the major elements of the proposed project are listed in Table 1.1. The impacts and mitigation acreages are listed by reach in Chapter 7—Description of the Recommended Project and in detail in the project EIR.

TABLE 1.1
Summary of Vegetation Impacts and Mitigation Requirements[1]

Proposed Project Item	Impacts (acres)	Mitigation (acres)
Channel modification at West Edith Road	0.46	0.56
Channel modification at Foothill College	0.40	0.97
Culvert replacements (6)	0.29	0.51
Erosion repair sites (17)	0.25	0.32
Maintenance program mitigation bank	—	0.29
TOTALS FOR PROJECTS	1.40	2.64

[1] Data is from attached EIR.

Project Cost and Financing

The proposed project is estimated to cost approximately $8,592,000 of which $810,000 is for right of way, $7,258,000 is construction related, and approximately $524,000 is for mitigation.

The project is anticipated to be funded by continuation of existing revenues generated in the Northwest Zone. These sources include the District's allocation of the 1 percent property tax and flood control benefit assessments. Changes in funding would affect the estimated schedule.

The proposed measures and an estimate of reach-by-reach costs are summarized in Table 1.1.

Construction Staging

The project is scheduled to be constructed over a 4- to 5-year period commencing in the 1999 construction season. It is proposed that Reach 5 channel modifications downstream of West Edith Avenue be constructed first to coordinate with other construction near the project site. After that, the construction would proceed from Reach 1 upstream. A schedule of the construction staging is presented in Chapter 9—Project Cost, Financing, and Staging.

TABLE 1.2
Adobe Creek
Capital Improvement Project Cost Summary by Study Reach

Reach	Limits	Reach Length (feet)	Proposed Measures	Estimated Construction Cost (Thousands)	Total Cost[1] (Thousands)
1	El Camino Real to Hetch Hetchy Pipeline	2,860	El Camino Real Culvert Replacement and Erosion Repairs	$1,755	$1,902
2	Hetch Hetchy Pipeline to U/S Alta Mesa Cemetery	3,470	Erosion Repairs	106	204
3	U/S Alta Mesa Cemetery to Yerba Buena Avenue	5,315	Erosion Repairs	96	138
4	Yerba Buena Avenue to Foothill Expressway	1,165	Erosion Repairs	41	48
5	Foothill Expressway to West Edith Avenue	2,270	Additional Culvert at Foothill Expressway, Channel Modification 800′ Downstream of West Edith Avenue[2], and Erosion Repairs	2,320	2,642
6	West Edith Avenue to Burke Road	2,335	None	0	0
7	Burke Road to Manresa Way	3,440	Burke Road Culvert Replacement	493	535
8	Manresa Way to O'Keefe Lane	2,950	Erosion Repairs	10	17
9	O'Keefe Lane to Interstate 280	1,440	O'Keefe Lane Culvert Replacement	514	563
10	Interstate 280 to Foothill College Entrance	2,045	None	0	0
11	Foothill College Entrance to El Monte Road	1,510	Excavated Gabion/Rock Lined Channel Modifications—Entire Reach	1,802	2,156
12	El Monte Road to Tepa Way	1,815	Erosion Repairs	91	119
13	Tepa Way to Rhus Ridge Road	1,150	Bypass Entrance Modification	30	65
14	Rhus Ridge Road to Francemont Avenue	1,685	None	0	0
15	Francemont Avenue to Murietta Lane	2,635	None	0	0
16	Murietta Lane to U/S Moody Road	4,415	None	0	0
			TOTAL PROJECT COSTS	$7,258	$8,389[3]

---

[1] Includes cost for engineering, construction, right of way, mitigation, and inspection. See Appendix F for detailed cost estimates.

[2] Right of way for project must be dedicated prior to the commencement of construction.

[3] Does not include $203,000 cost for mitigation site for future maintenance (see EIR for explanation).

CHAPTER 2
WATERSHED STUDY BACKGROUND

This chapter of the report discusses the Adobe Creek watershed, watershed hydrology, previous engineering studies and construction, the Adobe Creek Restoration Plan, the geological and hydrogeological setting, the historic stream channels, historic land subsidence, environmental setting, and cultural resources.

WATERSHED DESCRIPTION

Adobe Creek is located in the northwestern portion of Santa Clara County and it lies within the District's Northwest Zone (see Figures 2.1 and 2.2).

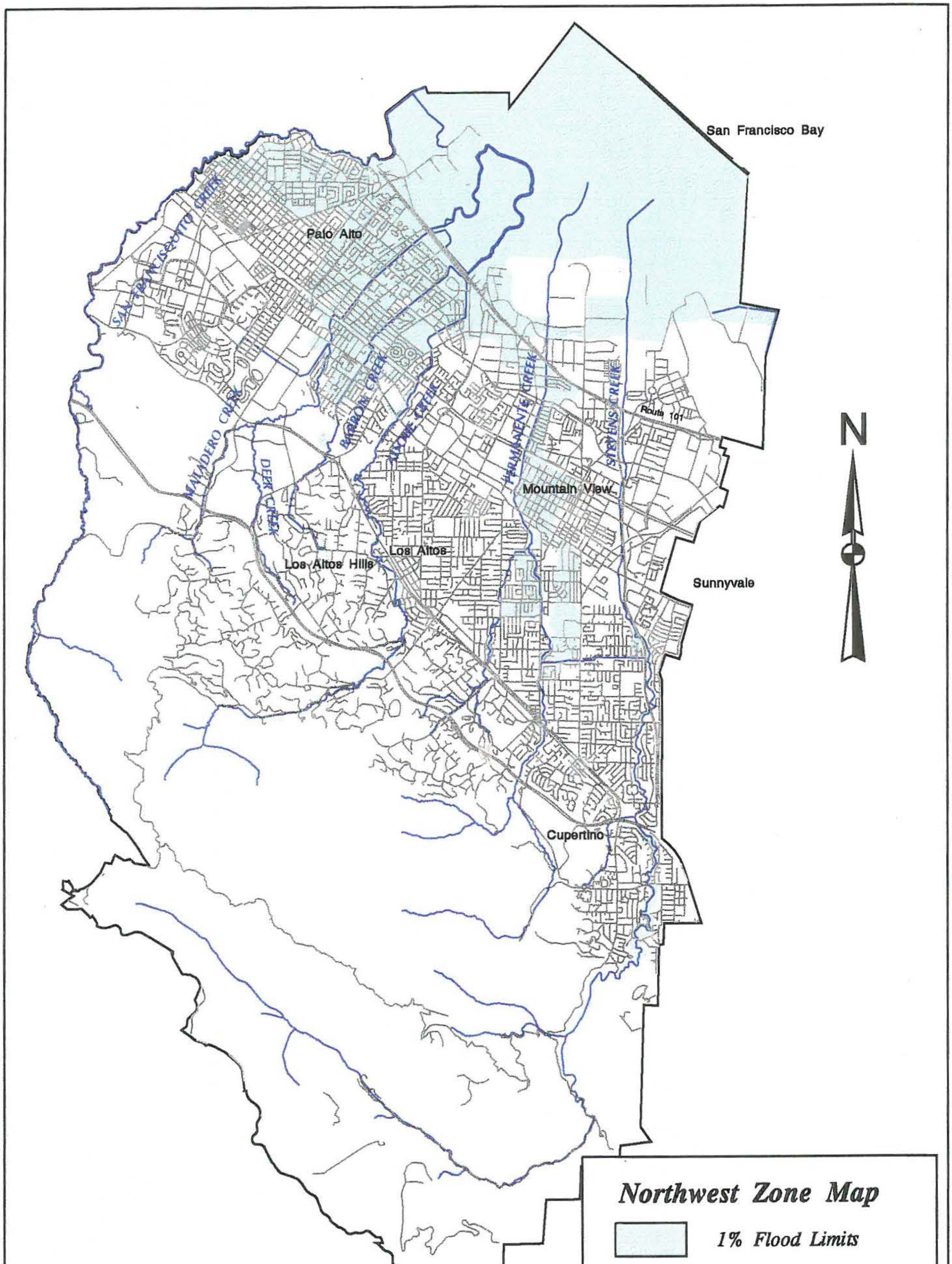
Adobe Creek originates in the northeasterly slopes of the Santa Cruz Mountains near Monte Bello Ridge. The creek flows through mostly residential areas of the cities of Los Altos, Mountain View, and Palo Alto, and the Town of Los Altos Hills. The creek ultimately flows into the Palo Alto Flood Basin immediately northeast of the Bayshore Freeway (Highway 101).

Adobe Creek drains an area of approximately 10 square miles of which roughly 7.5 square miles are mountainous and 2.5 square miles are valley floor. The mountainous areas are characteristically brushy woodland with low-density residential development. The valley floor areas are urbanized. The land uses in the watershed are approximately: 40 percent medium density (valley floor), 26 percent low density (foothills), and 34 percent open space (upper watershed). The land distribution is illustrated on Figure 2.3.

The area has a generally mild climate. Mean annual precipitation ranges from about 34 inches in the upper watershed to 14 inches on the valley floor. About 90 percent of the rainfall takes place in the 5 months of November through March. The majority of the flow in Adobe Creek is produced by rainfall that occurs in the higher elevations within the watershed. The steep nature of this portion of the watershed results in short duration and high intensity runoff for most major storms. Runoff from some of the lower urbanized portions of the watershed is controlled and partially detained by the storm sewer system.

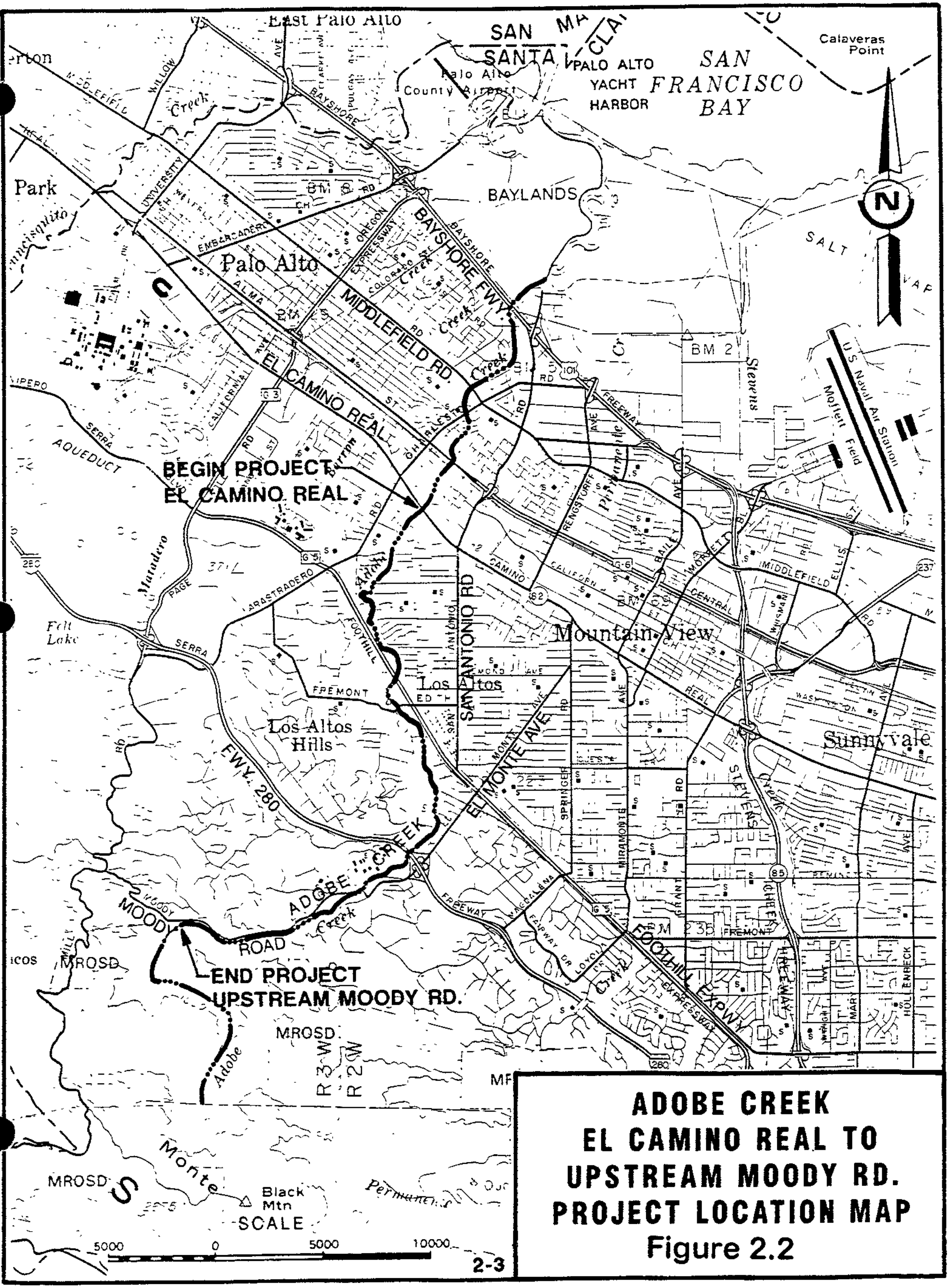
WATERSHED HYDROLOGY

The Adobe Creek hydrology was originally computed in a District-wide effort in 1978 and updated in 1989. Since Adobe Creek does not have any streamflow gages that have an adequate length of record for hydrology analysis, the hydrology was computed with comparison values from numerous gages in the region including Matadero Creek (the nearest creek with a stream gage). The Matadero Creek streamflow gage has been in operation since 1952 (37 years of record up to 1989), and was in place to gage many significant storm events. Data from the surrounding region was also utilized. Arroyo Seco, a tributary of the Salinas River with over 100 years of stream gage records, was used to statistically enhance the Matadero Creek records.



Northwest Zone Map

Figure 2.1



ADOBE CREEK
EL CAMINO REAL TO
UPSTREAM MOODY RD.
PROJECT LOCATION MAP

Figure 2.2

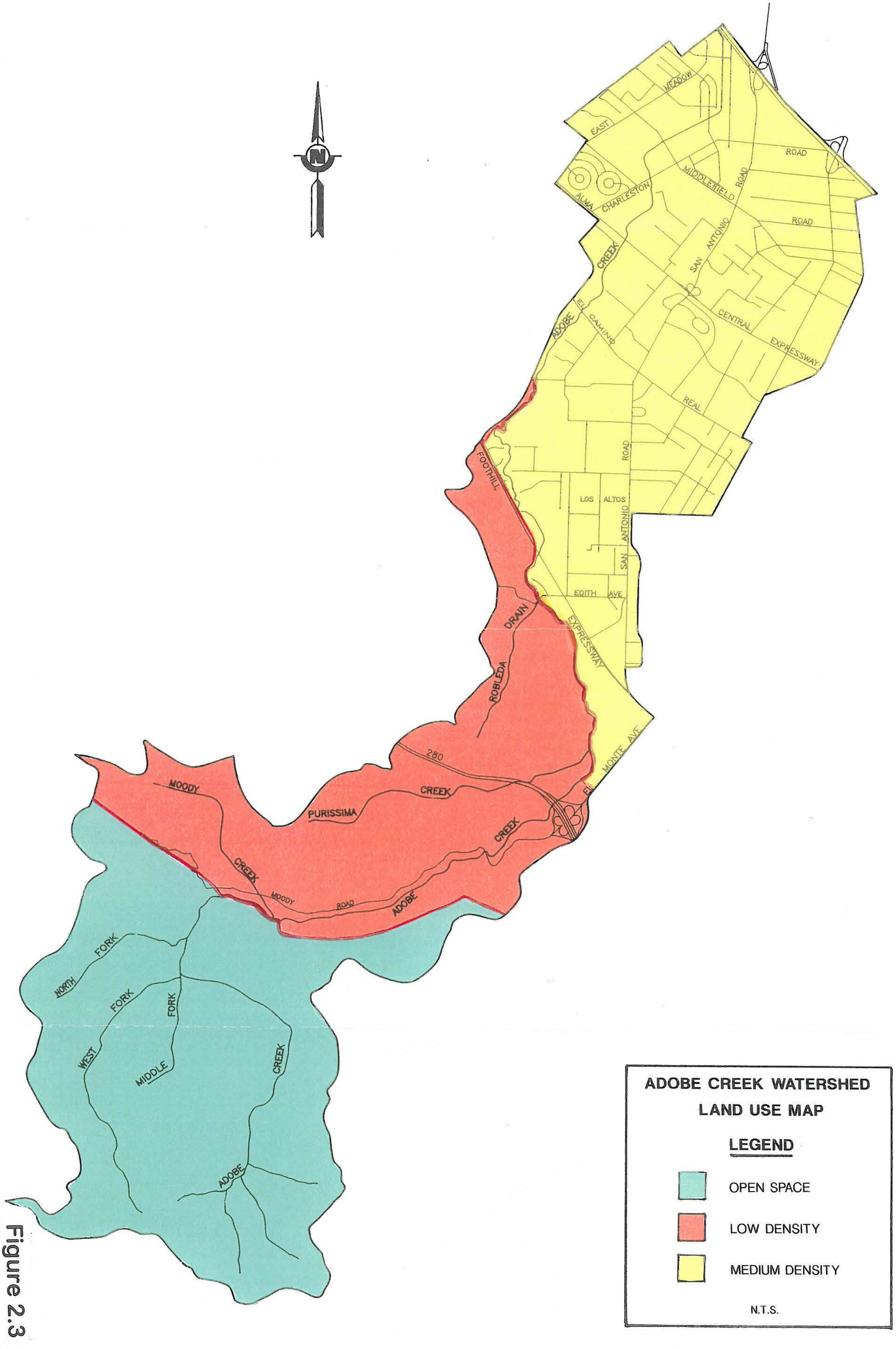

N
ADOBE CREEK WATERSHED
LAND USE MAP
LEGEND
🟦 OPEN SPACE
🟥 LOW DENSITY
🟨 MEDIUM DENSITY
N.T.S.
EAST MEADOW
ROAD
MIDDLEFIELD ROAD
ROAD
ALMA
CHARLESTON
SAN ANTONIO
ADOBE CREEK
EL CAMINO REAL
CENTRAL EXPRESSWAY
FOOTHILL EXPRESSWAY
ROAD
LOS ALTOS
SAN ANTONIO
EDITH AVE
EL MONTE AVE
ROBLEDA DRAIN
280
MOODY CREEK
PURISSIMA CREEK
CREEK
MOODY ROAD
ADOBE
NORTH FORK
WEST FORK
MIDDLE FORK
CREEK
ADOBE

Figure 2.3

The District uses three techniques to derive comparative results (design peak stream flows and maximum flow volumes) on any watershed similar to Adobe Creek. These three techniques are:

- An analysis of the rainfall/runoff relationship for the watershed.
- A statistical analysis of historical stream gage records in the watershed or nearest gaged watershed.
- A regression analysis of historical stream gage records of streams in the surrounding areas (regional flood frequency analysis) as applied to the watershed being analyzed.

After these three values have been calculated, they are weighted, combined, and averaged. The one percent and ten percent (100 year and 10 year) results for the Adobe Creek watershed are presented in Table 2.1. A detailed discussion of the watershed hydrology is contained in Appendix I.

TABLE 2.1
Peak Flood Flows
Adobe Creek Watershed

Location	1% Peak (cfs)	10% Peak (cfs)	Drainage Area (square miles)
At Francemont Avenue	1,800	900	4.60
At Bypass Channel Entrance	2,000	1,100	5.01
At Bypass Channel Confluence	1,100[1]	1,100	5.01
Adobe Creek u/s Purissima Creek Confluence	2,000	1,100	5.53
Adobe Creek at Foothill Expressway	2,700	1,400	7.10
Adobe Creek at El Camino Real	2,900	1,600	8.90
Adobe Creek u/s Barron Creek	3,080	1,820	10.84

[1] 900 cfs in bypass channel

PREVIOUS ENGINEERING STUDIES AND CONSTRUCTION

Various studies addressing flooding and erosion problems in the Adobe Creek watershed have been performed over the years.

In 1956, a report was prepared addressing flood protection for Adobe Creek between Louis Road and Alma Street. In 1956-57, a trapezoidal concrete channel was constructed in this reach.

Later in 1956, a plan was adopted for providing flood and erosion control protection along Adobe Creek from Alma Street in Palo Alto to approximately Tepa Way in Los Altos Hills. The plan consisted of a trapezoidal concrete channel from Alma Street to 1,100 feet upstream of West Edith Avenue and an excavated earth channel from there to 1,200 feet upstream of El Monte Avenue. For the reach of the creek from Alma Street to El Camino Real, a trapezoidal concrete channel was constructed in 1959 by the District. The channel construction did not continue upstream of El Camino Real due to public opposition to the channel modifications proposed.

The District conducted a study in 1975 investigating Adobe Creek from El Camino Real to the headwaters. After numerous public meetings, it was determined that residents preferred to deal with the ongoing erosion problems on an "as-needed" basis.

During the time the 1975 study was being conducted, an 8-foot pipe diversion was constructed starting near the intersection of Moody and El Monte Roads (on the Foothill College campus), going upstream approximately 2,200 feet, ending just upstream of Tepa Way. This bypass was installed due to the critical nature of the flooding and erosion problems in this reach of Adobe Creek.

In 1985, the District completed an Engineer's Report for flood control on Adobe Creek between the Palo Alto Flood Basin and El Camino Real. The purpose of this study was to provide 1 percent creek capacity downstream of El Camino Real. This reach of the creek was inadequate due to land subsidence and undersized culverts. The channel and culverts were all constructed to the 1 percent level by 1992.

Also in 1985, a joint project was done between the District, the City of Los Altos, and the Town of Los Altos Hills. This project was to replace the West Edith Avenue bridge because it was under 1 percent capacity and notorious for causing frequent flooding in the area. The new bridge was designed with sufficient capacity to pass the 1 percent flood.

Erosion repair has been carried out by the District's Maintenance Department on a priority basis.

ADOBE CREEK RESTORATION PLAN

In 1988, the City of Los Altos, the Town of Los Altos Hills, and the Hidden Villa Trust received an Urban Stream Restoration Program Grant from the California Department of Water Resources (DWR). The grant was for the development of a comprehensive stream restoration plan for Adobe Creek from El Camino Real to the headwaters. A condition of the grant was a community involvement program, including public workdays and community education activities. A consortium of the Habitat Restoration Group/John Stanley and Associates, Philip Williams and Associates, and 2M Associates prepared the Adobe Creek Restoration Plan. Assisting in the preparation of the Plan were the District, the City of Los Altos, the Town of Los Altos Hills, Hidden Villa Trust, and concerned citizens living in the proximity of Adobe Creek. The plan is being implemented by the City of Los Altos, the Town of Los Altos Hills, and the Hidden Villa Trust as a guide for future land use decisions, for long-term maintenance, and as a reference to educate the public on methods of creek maintenance.

The goals of the restoration plan include: maintaining and/or enhancing the wildlife habitat and recreational opportunities; suggesting erosion control methods which would sustain habitat quality, and educating the public on the values and needs of Adobe Creek. The plan recommended several methods to attain these goals. Habitat enhancement recommendations included planting and/or seeding of desired species and the control and/or removal of undesirable plant species. Erosion control measures included revegetation facilitated by the use of jute or plastic netting and preservation of trees and shrubs along the creek for their value in erosion control. Other recommendations included developing a trail system and educating the public on the needs and values of Adobe Creek and on methods for property owners to improve wildlife habitat.

The District assisted in the preparation of the Adobe Creek Restoration Plan and generally supports efforts to restore the natural qualities of Adobe Creek. The recommendations in the restoration plan will be discussed in the Formulation of Alternatives section of the Flood Protection Project Elements Chapter.

When following recommendations from the plan, it is important to remember that the District's Ordinance 83-2 requires that a permit from the District be obtained prior to any construction, excavation, deposition of material, or revegetation within the creek or the bank. Through the permitting process, the District can ensure that work performed is not detrimental to the proper functioning of the creek and does not interfere with the District's maintenance and operations activities. A copy of the Ordinance is included as Appendix J.

GEOLOGICAL AND HYDROGEOLOGICAL SETTING

In Santa Clara Valley, thick deposits of unconsolidated alluvial fill and aggregate have washed down from the mountains onto the valley floor filling the valley to a maximum thickness in excess of 1,500 feet. The alluvial fill that comprises the valley floor has been deposited as gently sloping granular alluvial fans spreading out onto the valley from the streams as they emerged into the valley from the mountains. The basin and shallow marine deposits in the flat interior baylands consist predominantly of fine grained deposits, silt, and clay.

Adobe Creek passes through the shallow marine deposits, across the alluvial plain at the base of the Santa Cruz Mountains, and then into a narrow alluviated mountain valley as it approaches its headwaters. On the alluvial plain the surface soil is black to brown and silty to sandy for a depth of 10 feet. From 10 to 20 feet, the soil is reddish-brown to brown-gravelly sand clay.

The typically thin alluvial fill of the mountain valley (upstream of Interstate 280) is underlain by bedrock which contains and transmits groundwater through fracture and joint openings in the rocks. Within the mountain valley, the movement of the groundwater in the bedrock would be downslope toward the stream from the surrounding hillside through fracture openings and soil cover. As the stream flows within the shallow alluvial fill, it may be locally effluent (groundwater seepage discharging into the stream as surface flow) or locally influent (stream seepage into the underlying bed materials) depending on the season of the year. Therefore, the stream may gain or lose surface flow volume as it passes through this section.

As the channel passes from the mountain valley to the upper alluvial plain near Interstate 280, the soil consists of alternate layers of clay, loam, gravel, sand, and various mixtures of each. The stream becomes primarily influent. The natural streambeds on the upper alluvial plain are one of the primary sources of recharge for the groundwater basins of the Santa Clara Valley which are sources of domestic water.

The Santa Clara Valley area is recognized as a seismically active region. The closest mapped fault to the capital improvement reach is the Shannon fault, which ranges from a distance of 0.25 miles to 3.75 miles south and southwest of the project reach, respectively. The San Andreas fault ranges from a distance of approximately 3 to 8 miles to the southwest. The Hayward and Calaveras faults are located approximately 11 and 16 miles northeast of the project reach, respectively. No mapped faults or fault traces are locate in the reach. The seismicity and soils are discussed in greater detail in the project EIR.

HISTORIC STREAM CHANNEL

Historically, Adobe Creek above the Southern Pacific Railroad (SPRR) (Alma Street) has always had a well-defined incised creek channel. Downstream of SPRR the channel lost its definition as the land surface flattened out in the basin and marine baylands. Streamflows overflowed Adobe Creek downstream of SPRR and eventually become tributary to Permanente Creek in the baylands area. Permanente Creek then discharged into San Francisco Bay through Charleston Slough.

As agriculture expanded in the area, Adobe Creek was extended as an earth ditch out to the baylands.

The historic stream channel of Adobe Creek in 1876 is shown in Figure 2.4.

HISTORIC LAND SUBSIDENCE

Historic land subsidence has occurred in the Santa Clara Valley as a result of overdraft pumping of groundwater basin. It is estimated that between 1934 and 1967, the ground level in the Santa Clara Valley subsided to a maximum of 8 feet centered in an area southeast of downtown San Jose (see Figure 2.5). This led to the collapse of many well casings that were constructed to the deep groundwater confined zone. Structures that rely on hydraulic gravity flow such as sewer and storm drain lines and creeks were also impacted. However, other structural facilities such as highways and buildings were not impacted as land subsidence occurs on a gradual basis and covers a large area. Since 1969, due to the successful management of water supply by the District to balance the ever-increasing demand for water in the Santa Clara County, land subsidence has stopped. Water imported through the South Bay Aqueduct of the State Water Project has also allowed the reduction in groundwater pumping from the groundwater basin.

Land subsidence caused the southern shoreline of the San Francisco Bay to drop below sea level. As a result, levees were constructed along the bay front and along the tributary streams to prevent saltwater flooding in the baylands. In the areas that subsided below the sea level and the areas behind the levees, local drainage runoff has to be pumped over the levees and into the creeks and the bay.

A tide gate at the exit of the Palo Alto Flood Basin regulates flow in and out of the leveed basin.

ADOBE CREEK HISTORIC STREAM CHANNEL IN 1876

source: Thompson and West Historical Atlas of Santa Clara County

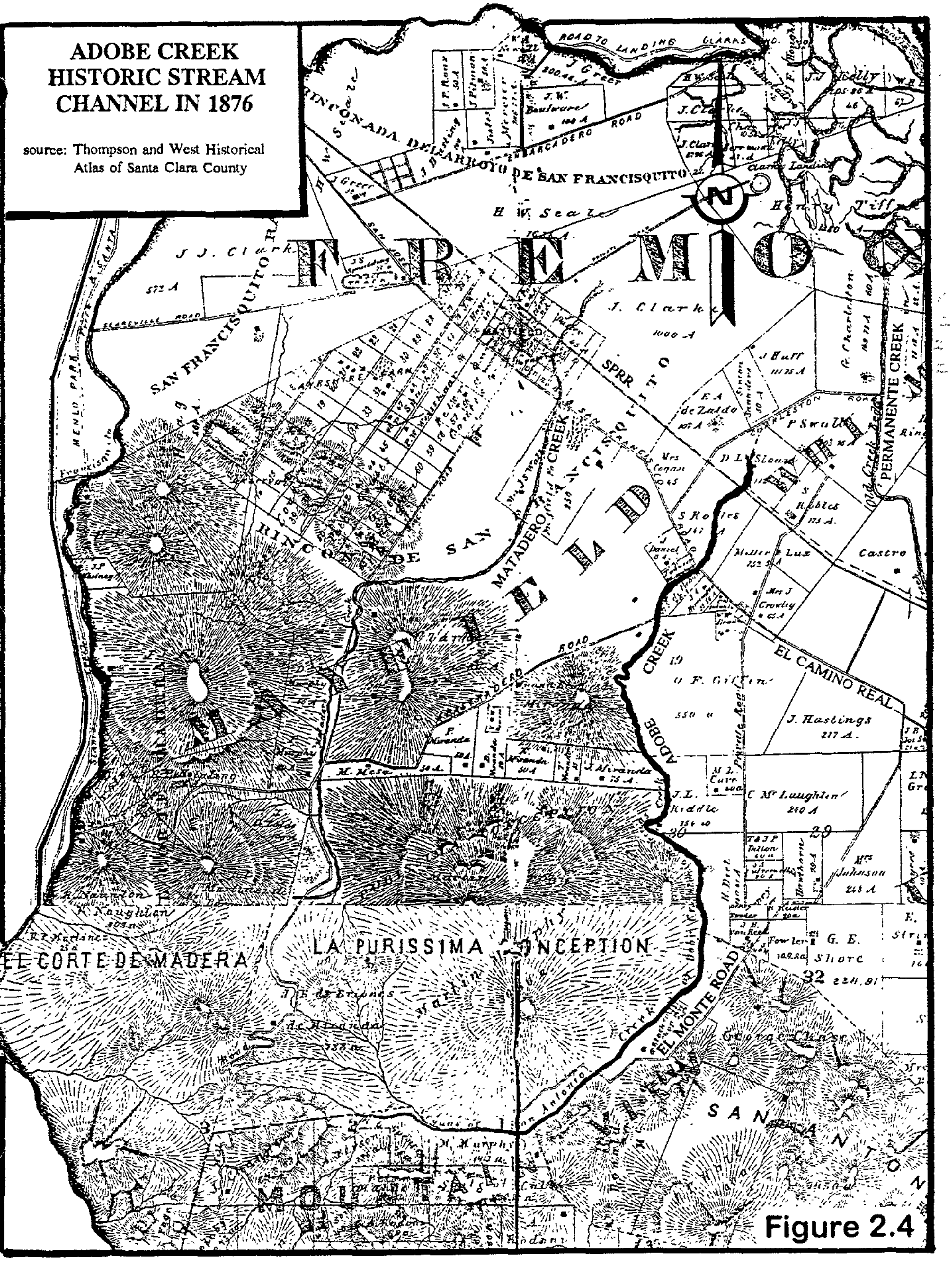
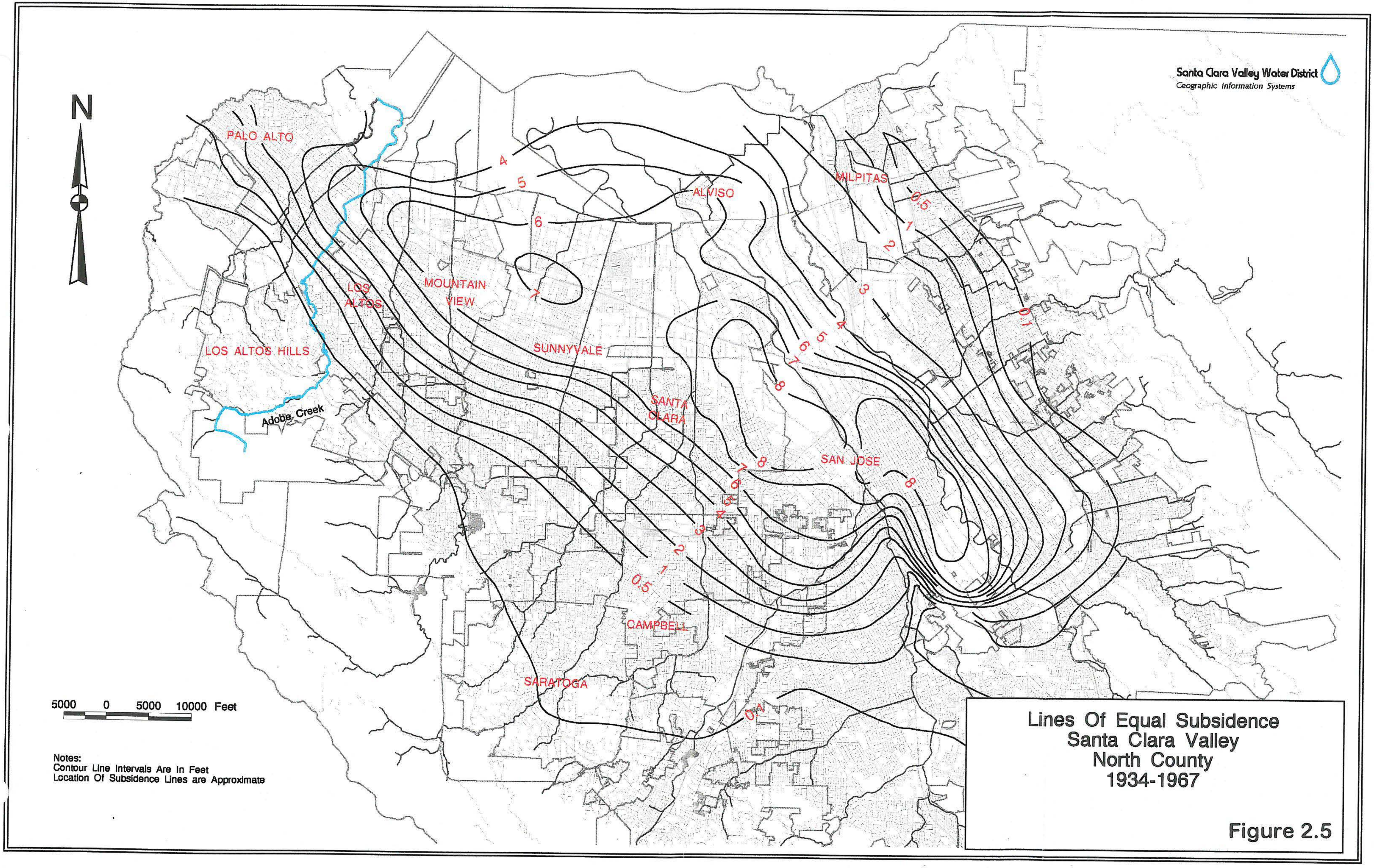


Figure 2.4



Notes:
Contour Line Intervals Are In Feet
Location Of Subsidence Lines are Approximate

Lines Of Equal Subsidence
Santa Clara Valley
North County
1934-1967

Figure 2.5

ENVIRONMENTAL SETTING

The creek is vegetated with trees, shrubs, and groundcovers along most of the project reach. This riparian corridor contains both native and non-native plant species and intergrades with adjacent landscaping to the point where it is difficult to define the limit of the riparian corridor in many areas. The presence of this adjacent landscaping provides some additional habitat for wildlife, especially birds, but is also a source of invasive non-native plant species. These invasive non-native species occupy space throughout the riparian corridor that could otherwise be occupied by native species with higher habitat values.

This riparian habitat within the project reach is also highly disturbed due to adjacent development, unstable banks, artificial surfaces (sack concrete, gunite, wood walls), etc. There are very few areas dominated by native species that would be considered high value wildlife habitat. Most habitats within the project reach are of low to medium value to wildlife due to the disturbed nature of the habitat. Flow in the creek is intermittent in most areas, and the channel is typically dry for most of the year.

Upstream of the project reach the riparian habitat comprises broad stands of forest which intergrade with surrounding forest on lightly developed hillsides. These upstream areas support relatively pristine riparian habitat that, along with the adjacent upland habitat, supports a wide array of plant and wildlife species. These upstream areas are an important source of plant material and wildlife that move downstream into the project reach. The wildlife that move into the project reach from upstream may ultimately reside within the project reach, or temporarily forage and then move elsewhere.

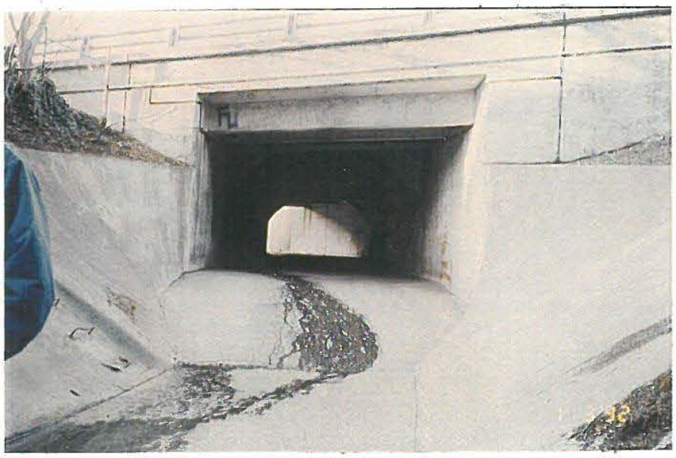
Downstream of the project reach, the creek is a completely channelized concrete drainage, which supports little or no riparian vegetation. This channelized drainage constitutes a barrier to upstream movement of fish, and thereby severely compromises the fisheries resources of the creek in the project reach.

Photographs of the study reach are shown on Figure 2.6. For a more detailed description of the environmental setting, see the project EIR.

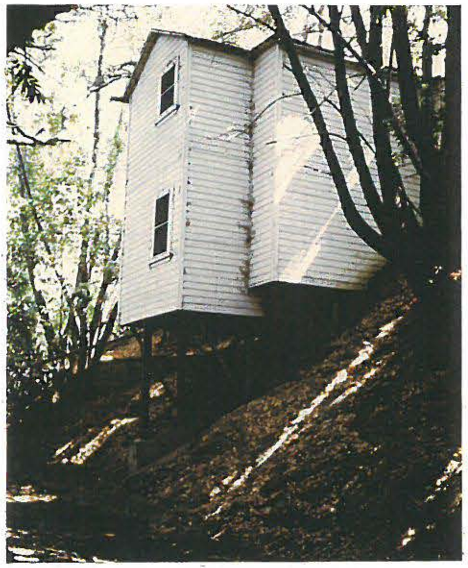
CULTURAL RESOURCES

An archeological evaluation was performed to determine the likelihood of encountering cultural resources in the capital improvement reach. The evaluation included an archival search in the State records and a surface survey of existing archeological sites that could be impacted. The archival search revealed that there are a number of recorded archeological sites located in the vicinity of the project area. The surface reconnaissance relocated two of the these prehistoric sites, CA-SCL-354 and -601. Portions of these two sites extend into the proposed project reach, and may be impacted by any construction within their boundaries. The archeological report is included in the project EIR.

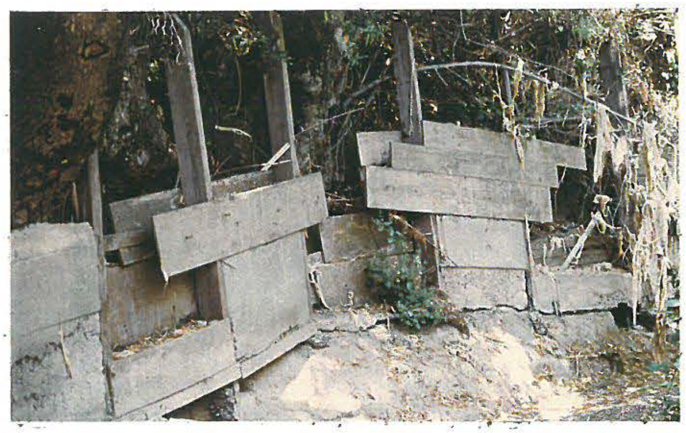
FIGURE 2.6
Adobe Creek Existing Conditions Photographs


El Camino Real Culvert

Upstream of El Camino Real (S2616-12)

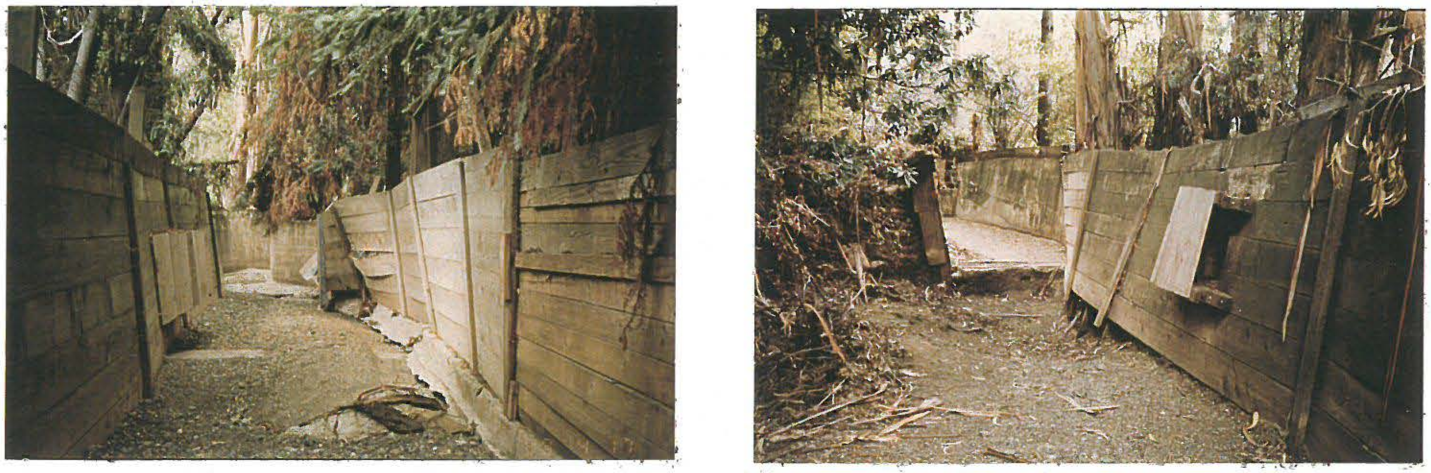

Building Built in Creek (S1840-19)

Yerba Buena Avenue Culvert (S2615-10)

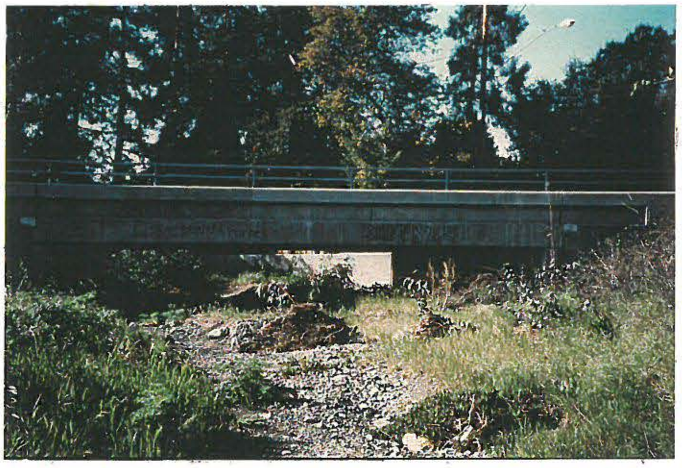

Failing Bank Protection (S1840-48)

Foothill Expressway Culvert (S2615-17)

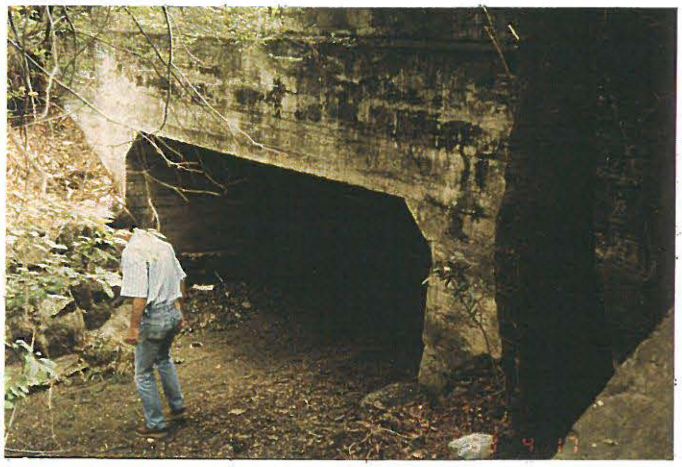
Figure 2.6
(continued)



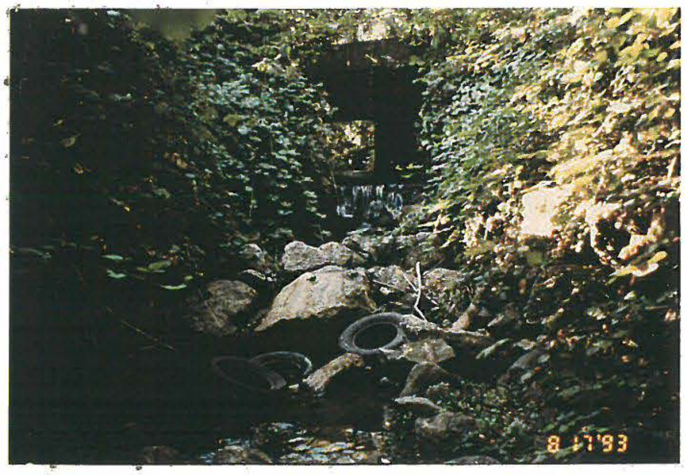
Wooden/Concrete Retaining Walls Downstream of West Edith Avenue (S2615-20 & 21)



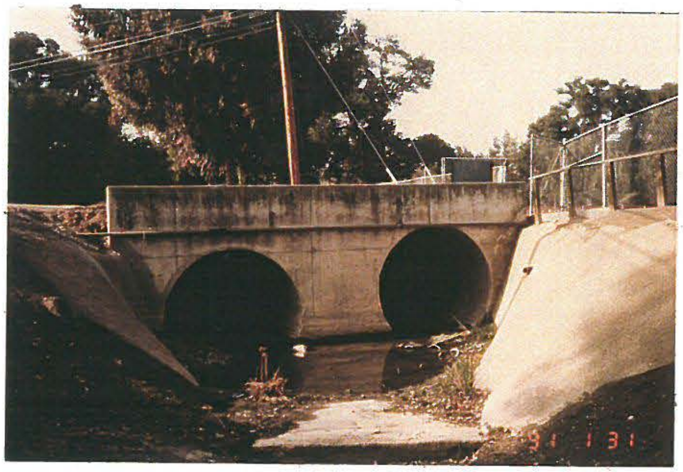
West Edith Avenue Bridge



Burke Road Culvert (S2614-2)

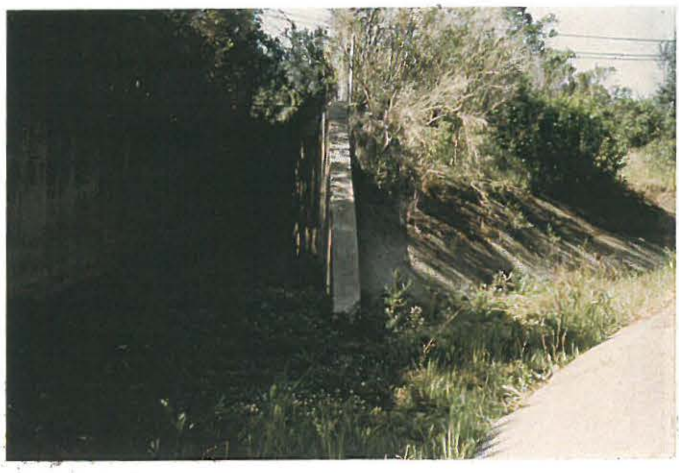


O'Keefe Lane Culvert (S3641-2)

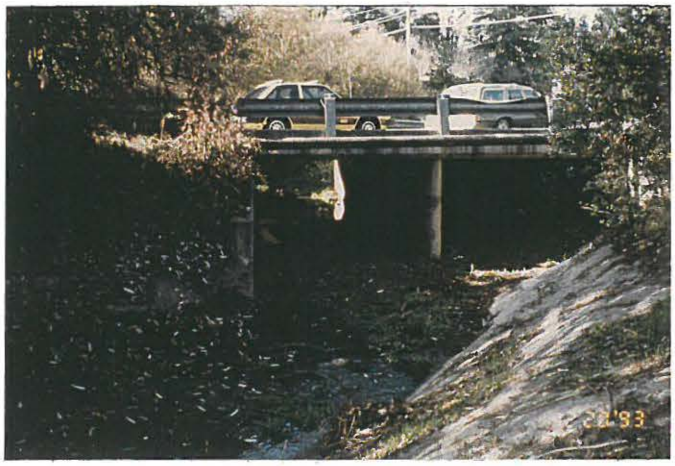


Pipe Culverts - Foothill College (S3084-28)

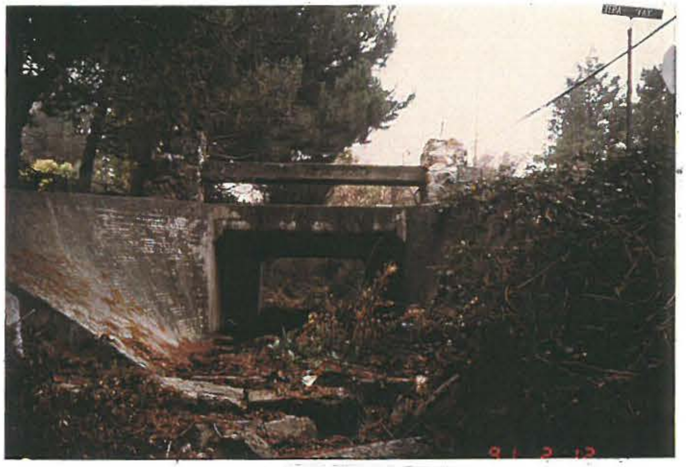
Figure 2.6
(continued)



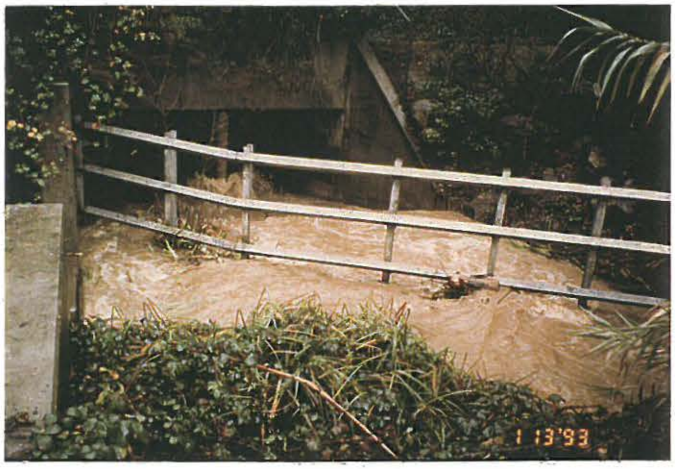
Bypass Exit - Foothill College (S2616-6)



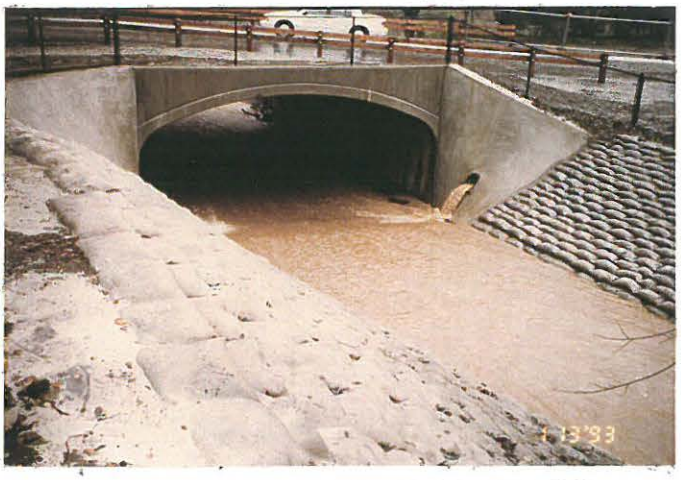
El Monte Road Culvert (S3698-7)



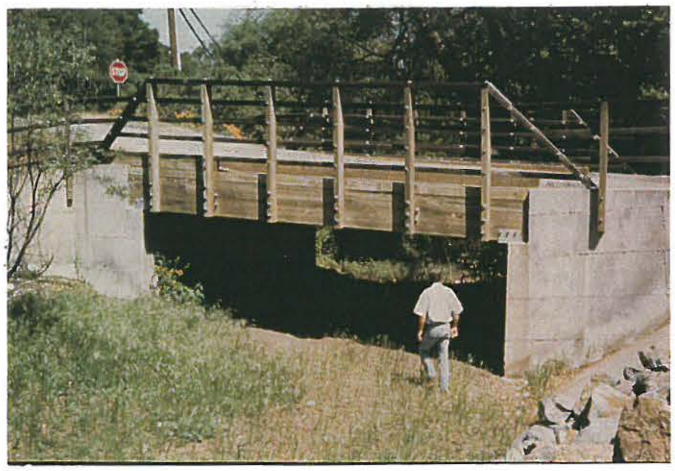
Tepa Way Culvert (S3084-31)



Bypass Entrance Upstream Tepa Way (S3529-5



Francemont Avenue Culvert (S3529-57)



Murietta Lane Bridge (S2614-11)

CHAPTER 3
PROBLEM DEFINITION

This chapter of the report describes the problems in the Adobe Creek Watershed. Potential water quality problems, historic and recent flooding problems, the 1 percent flood, maintenance concerns, erosion and sedimentation, and local drainage problems are discussed.

WATER QUALITY PROBLEMS

Water quality degradation is usually caused by sources such as:

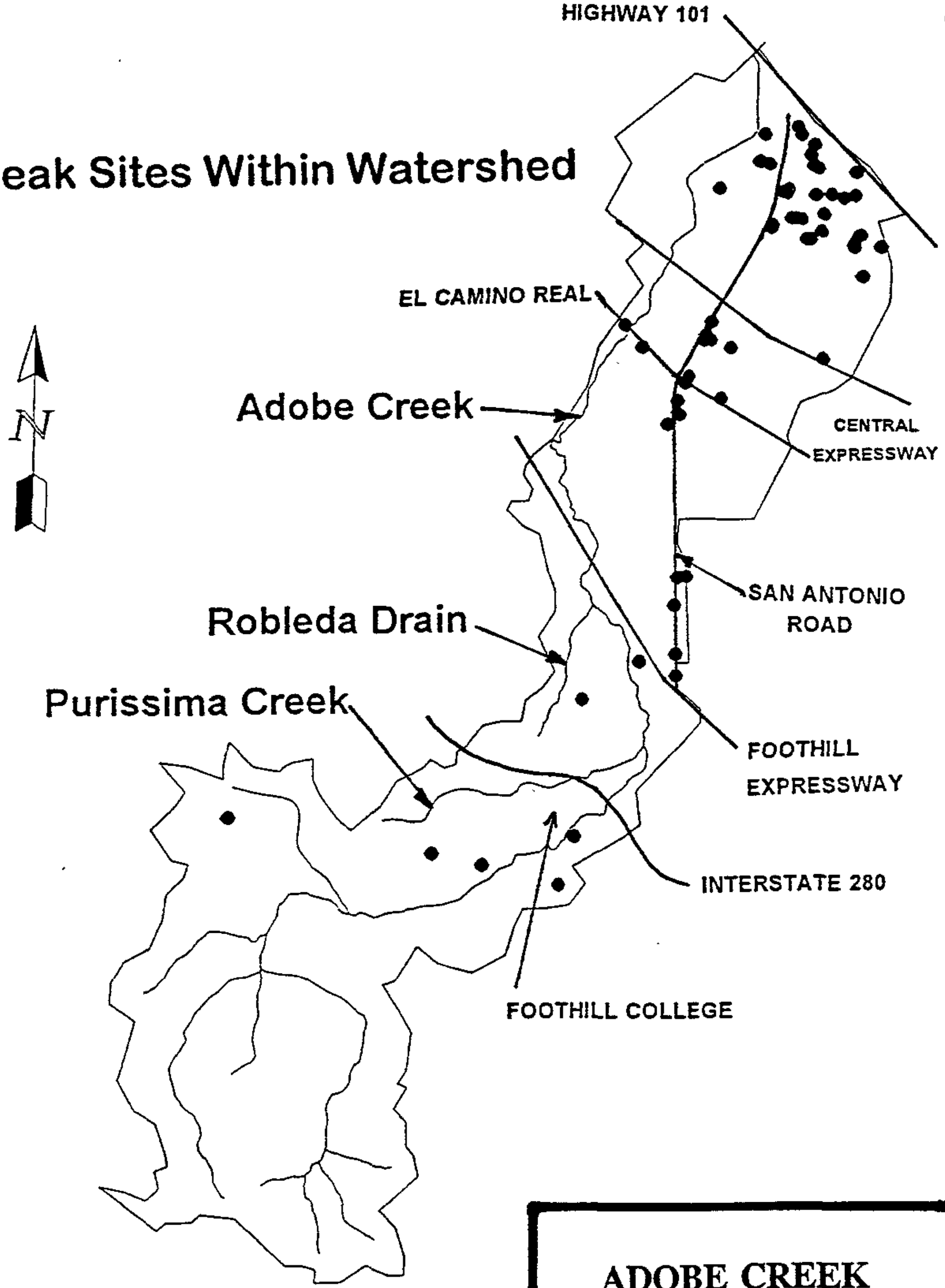
- Agricultural activities
- Commercial and industrial activities
  - Leaking underground storage tanks
  - Spills
- Land alteration
  - Commercial and residential development
  - Wetland and riparian area degradation
- Urban storm water runoff (nonpoint source pollution)
- Transportation activities
- Increases in wells near the creek
- Erosion of creek banks (sediment)

Some of these activities are sources that could contribute to water quality impairment in the Adobe Creek watershed.

In recent years, leaking underground tanks and industrial spills have threatened groundwater quality in the watershed area. At various locations in the watershed, motor fuels have leaked from storage tanks into soil and shallow groundwater aquifers. Since the District's groundwater protection program was started in 1987, 65 fuel leak sites have been identified within the Adobe Creek watershed. Figure 3.1 shows the location of those sites. Of the sites identified, 38 have involved groundwater contamination and 16 have soil pollution and may involve groundwater contamination.

Nonpoint source pollution is another threat to the water quality in Adobe Creek. Pollutants from exposed soil, roofs, streets, parking lots, freeways, illegal dumping, and industrial sites are washed into storm drains, which empty into Adobe Creek. Adobe Creek drains into the Palo Alto Flood Basin and eventually into the San Francisco Bay. These pollutants include sediment, oils, heavy metals, grease, pesticides and organic chemicals, which may be hazardous to aquatic and human life when they enter the food chain and are consumed by wildlife or humans.

65 Fuel Leak Sites Within Watershed



ADOBE CREEK WATERSHED
FUEL LEAK SITES IDENTIFIED
1987 - PRESENT
Figure 3.1

Under existing conditions, many locations in the project reach are highly erosive. This is a condition which introduces large quantities of sediment into the creek system during high flows and negatively impacts the existing aquatic environment. Reduction in the amount of sediment introduced into the creek system is a major goal of this study. This will be accomplished through erosion control and channel modifications.

In the past, wastewater treatment plants(WWTP) were seen as the primary source of water pollutants. Nationwide studies over the last 15 years, however, have revealed that runoff from urban areas contains the same pollutants found in discharges from sewage treatment plants (point sources). In addition, water pollution from nonpoint sources has increased relative to point sources as a result of improved equipment and WWTP operations. Annual loads were estimated for the three Lower South Bay WWTPs (San Jose, Sunnyvale, and Palo Alto), based on 1987 and 1988 self-monitoring effluent data, and are compared with the estimated mean annual load from nonpoint sources. The result is in Figure 3.2, which indicates that nonpoint sources are a significant contributor of chromium, copper, lead, nickel, zinc and sediment. Further studies have shown that the relative loading of copper per year from the WWTPs is less than 4,000 pounds while nonpoint sources contributes about 17,000 pounds/year. Significant sources of nonpoint source pollution include copper which results from the wear and tear of automotive brake pads and from sediment.

FIGURE 3.2
Point Versus Nonpoint Source Loads
(From 1991 Loads Assessment Report)

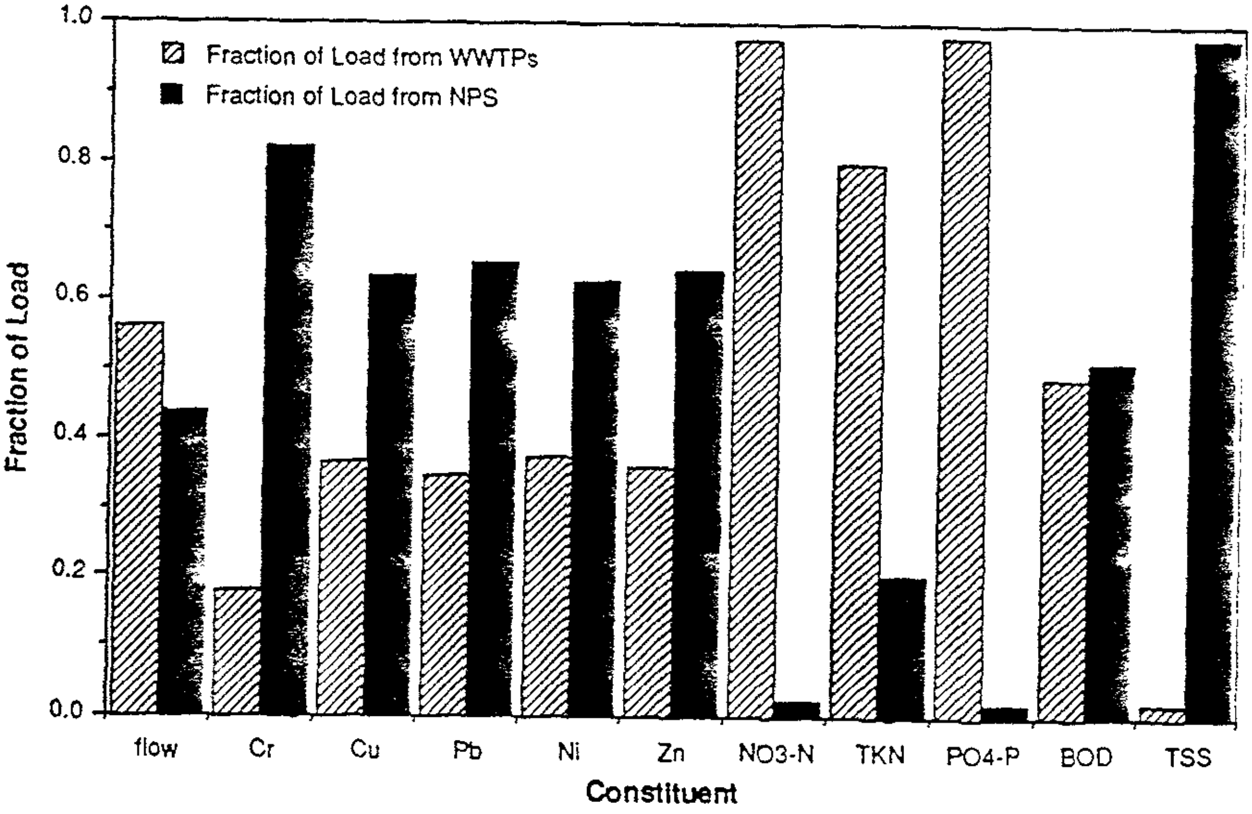


Table 3.1, from 1991 Loads Assessment Report done by the Santa Clara Valley Urban Runoff Pollution Prevention Program, presents the estimated annual loads of metals and organics to San Francisco Bay by watershed. The Adobe Creek watershed shown in the report contributes an estimated 8 to 11 percent (10 percent average) of the metals and organics discharged to the Bay from Santa Clara County. The data on Table 3.1 is for Adobe, Barron, and Matadero Creeks. These creeks were added together because they discharge into the Palo Alto Flood Basin. Therefore, the values for Adobe Creek alone would be lower than those reported.

In support of the nonpoint source pollution program, a search was conducted to identify all of the storm water outfalls into the creek in the study reach. The records in the two cities and town were examined and supplemented with a visual search and field survey.

Presented in Table 3.2 are all the outfalls identified in the study reach. They are listed by creek station and study reach, proceeding upstream from El Camino Real. During this search, 11 outfalls identified as illegal or unknown (mostly pool drains) were located. A list of these illegal outfalls was transmitted to the District's Community Projects Review Unit for investigation and enforcement.

A Phase I hazardous materials investigation was performed on the study reach in accordance with ASTM (American Society for Testing and Materials) guidelines established to satisfy due diligent inquiry for property acquisition. The objectives of the Phase I investigation were to identify existing and potential contaminant sources, evaluate potential impacts to the project alignment, and develop recommendations regarding further investigations that may be required to determine the extent of subsurface contamination and its potential impact on proposed construction. The Phase I investigation was performed in September and October of 1993. The study concluded that it is unlikely that any of the sites identified in the study reach present hazardous materials impacts. An analysis of the data gathered for the investigation as well as the full text of the report is contained in the project EIR.

The creekbed surface and subsurface sediments in Adobe Creek were tested at nine locations for the presence of EPA priority pollutant metals, chlorinated pesticides, polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons, chlorinated herbicides, total petroleum hydrocarbons (diesel), and total recoverable petroleum hydrocarbons. In addition, because of the mixture of Barron Creek waters and Adobe Creek waters in the Palo Alto Flood Basin (the most downstream test location), a comparison test was conducted on Barron Creek sediments just upstream of its confluence with Adobe Creek. The test locations are shown on Figure 3.3 and the results of the tests are shown on Table 3.3. Test data were compared with the Puget Sound Marine Sediment Quality Standards (Washington State Department of Ecology, 1991) considered to be those levels harmful to marine life, and background levels of the watershed. In all the Adobe Creek samples taken, none exceeded the Puget Sound criteria. The range of results is compared to the criteria and other results on Table 3.4. The sample taken in the Barron Creek sediments exceeded the Puget Sound standard for mercury and zinc. Both the Adobe and Barron Creek samples had higher levels of zinc in the tidal areas. In addition, none of the Adobe Creek samples exceeded California Hazardous Waste Thresholds. The sample data for copper and zinc are shown in a graphical format on Figure 3.4. A detailed description of the sediment testing and analysis is included in Appendix M.

TABLE 3.1
Mean Average Annual Wet Weather Loads by Watershed (Based on arithmetic average of 12 years of estimated annual load)

Watershed	Total Area (miles)	Flow (acre-feet)				Cadmium (lbs/year)				Chromium (lbs/year)			
		Ind	Res	Open	Total	Ind	Res	Open	Total	Ind	Res	Open	Total
Adobe, Barron, and Matadero	34	0	6,485	1,511	7,997	0 0	38 8	3 1	42 0	0	713	79	791
Calabazas	21	0	5,071	663	5,734	0 0	30 4	1 4	31 7	0	557	35	592
Coyote	123	1,357	6,085	5,904	13,345	27 7	36 4	12 3	76 4	276	669	307	1,252
Guadalupe	90	2,170	15,649	8,108	25,927	44 3	93 7	16 8	154 9	442	1,719	422	2,583
Los Gatos	18	0	2,764	283	3,047	0 0	16 6	0 6	17 1	0	304	15	318
Permanente	18	0	1,567	3,146	4,713	0 0	9 4	6 5	15 9	0	172	164	336
San Francisquito	8	0	552	846	1,398	0 0	3 3	1 8	5 1	0	61	44	105
San Tomas	27	1,332	5,694	979	8,005	27 2	34 1	2 0	63 4	271	626	51	948
Saratoga	17	0	938	4,634	5,572	0 0	5 6	9 6	15 2	0	103	241	344
Stevens Creek	12	0	1,415	130	1,546	0 0	8 5	0 3	8 7	0	155	7	162
Sunnyvale East	7	0	1,677	0	1,677	0 0	10 0	0 0	10 0	0	184	0	184
Sunnyvale West	5	0	1,320	1	1,321	0 0	7 9	0 0	7 9	0	145	0	145
TOTAL	380	4,859	49,218	26,205	80,283	99 3	294 8	54 4	448 5	989	5,407	1,364	7,761

Watershed	Total Area (miles)	Copper (lbs/year)				Lead (lbs/year)				Nickel (lbs/year)			
		Ind	Res	Open	Total	Ind	Res	Open	Total	Ind	Res	Open	Total
Adobe, Barron, and Matadero	34	0	1,339	56	1,395	0	1,354	21	1,375	0	1,663	174	1,838
Calabazas	21	0	1,047	24	1,072	0	1,059	9	1,068	0	1,300	77	1,377
Coyote	123	293	1,257	217	1,767	622	1,271	81	1,974	459	1,560	681	2,701
Guadalupe	90	469	3,232	298	3,999	995	3,268	111	4,375	735	4,013	935	5,683
Los Gatos	18	0	571	10	581	0	577	4	581	0	709	33	741
Permanente	18	0	324	116	439	0	327	43	371	0	402	363	765
San Francisquito	8	0	114	31	145	0	115	12	127	0	142	96	239
San Tomas	27	288	1,176	36	1,500	611	1,189	13	1,814	451	1,460	113	2,024
Saratoga	17	0	194	171	364	0	196	64	260	0	241	535	775
Stevens Creek	12	0	292	5	297	0	296	2	297	0	363	15	378
Sunnyvale East	7	0	346	0	346	0	350	0	350	0	430	0	430
Sunnyvale West	5	0	273	0	273	0	276	0	276	0	338	0	339
TOTAL	380	1,051	10,164	964	12,179	2,228	10,279	360	12,867	1,645	12,622	3,023	17,290

Watershed	Total Area (miles)	Zinc (lbs/year)				Nitrate (lbs/year)				Total Kjeldahl Nitrogen (lbs/year)			
		Ind	Res	Open	Total	Ind	Res	Open	Total	Ind	Res	Open	Total
Adobe, Barron, and Matadero	34	0	3,598	33	3,632	0	14,232	853	15,085	0	32,673	3,807	36,480
Calabazas	21	0	2,814	15	2,828	0	11,128	374	11,502	0	25,546	1,670	27,216
Coyote	123	4,407	3,377	130	7,914	2,552	13,353	3,332	19,237	5,533	30,655	14,871	51,059
Guadalupe	90	7,050	8,684	179	15,913	4,083	34,342	4,575	43,000	8,851	78,837	20,423	108,112
Los Gatos	18	0	1,534	6	1,540	0	6,065	160	6,225	0	13,924	712	14,637
Permanente	18	0	870	69	939	0	3,439	1,775	5,214	0	7,895	7,925	15,820
San Francisquito	8	0	306	19	325	0	1,211	477	1,689	0	2,781	2,131	4,912
San Tomas	27	4,327	3,160	22	7,509	2,506	12,498	552	15,555	5,433	28,687	2,466	36,586
Saratoga	17	0	521	102	623	0	2,060	2,615	4,675	0	4,728	11,672	16,400
Stevens Creek	12	0	785	3	788	0	3,104	74	3,179	0	7,129	328	7,458
Sunnyvale East	7	0	931	0	931	0	3,680	0	3,680	0	8,448	0	8,448
Sunnyvale West	5	0	732	0	732	0	2,896	1	2,897	0	6,648	2	6,651
TOTAL	380	15,784	27,311	579	43,674	9,141	108,009	14,788	131,937	19,818	247,952	66,009	333,778

Watershed	Total Area (miles)	Phosphate (lbs/year)				Biological Oxygen Demand (lbs/year)				Total Suspended Solids (lbs/year)			
		Ind	Res	Open	Total	Ind	Res	Open	Total	Ind	Res	Open	Total
Adobe, Barron, and Matadero	34	0	13,737	2,028	15,765	0	187,408	22,448	209,857	0	4,897,439	1,274,789	6,172,228
Calabazas	21	0	10,741	890	11,630	0	146,528	9,850	156,378	0	3,829,129	559,356	4,388,485
Coyote	123	6,705	12,889	7,920	27,514	49,789	175,834	87,689	313,312	2,042,272	4,594,967	4,979,611	11,616,851
Guadalupe	90	10,727	33,148	10,877	54,752	79,652	452,206	120,427	652,284	3,267,171	11,817,256	6,838,700	21,923,126
Los Gatos	18	0	5,854	379	6,234	0	79,868	4,201	84,068	0	2,087,145	238,537	2,325,682
Permanente	18	0	3,319	4,221	7,540	0	45,284	46,730	92,014	0	1,183,381	2,653,663	3,837,044
San Francisquito	8	0	1,169	1,135	2,304	0	15,950	12,568	28,517	0	416,800	713,700	1,130,500
San Tomas	27	6,585	12,061	1,313	19,959	48,892	164,545	14,540	227,978	2,005,462	4,299,972	825,713	7,131,147
Saratoga	17	0	1,988	6,216	8,204	0	27,122	68,824	95,946	0	708,769	3,908,307	4,617,076
Stevens Creek	12	0	2,998	175	3,172	0	40,894	1,936	42,830	0	1,068,669	109,932	1,178,600
Sunnyvale East	7	0	3,552	0	3,552	0	48,460	0	48,460	0	1,266,371	0	1,266,371
Sunnyvale West	5	0	2,795	1	2,797	0	38,134	14	38,148	0	996,534	793	997,328
TOTAL	380	24,017	104,292	35,155	163,424	178,333	1,422,233	389,226	1,989,792	7,314,906	37,166,432	22,103,102	66,584,439

TABLE 3.2
Adobe Creek Storm Drain Outfalls

Creek Station	Study Reach	Creek[1] Bank	Drain Size and Type	Invert Elevation	City ID No.	Comments
250+52	1	L	12″ CMP	54		Street drain from El Camino Real.
250+85	1	L	60″ RCP	47.5	LA-A-1	
252+00	1	R	18″ CMP	51.11		
252+70	1	L	12″ CMP	56.75		
254+00	1	L	12″ CMP	53	LA-A-2	
255+77	1	R	12″ RCP	56.59		Palo Alto storm drain.
258+72	1	L	12″ CMP	58.21		
260+99	1	L	12″ CMP	55.45	LA-A-3	
268+72	1	L	21″ CMP	64.68	LA-A-4	
271+49	1	R	24″ CMP	65.3		Palo Alto storm drain.
275+68	1	R	10″ CIP	69.27		Palo Alto storm drain.
276+14	1	L	8″ CIP	70.57		
279+56	2	L	66″ RCP	63.9	LA-A-5	
282+48	2	L	15″ CMP	78.15	LA-A-6	
288+47	2	L	15″ CMP	74.95	LA-A-7	
290+25	2	L	12″ CMP	86	LA-A-8	
298+95	2	R	12″ CMP	93		
299+20	2	R	6″ CMP	93		Tee-type outfall.
302+58	2	R	18″ CMP	88.79		Palo Alto storm drain.
313+60	3	R	10″ CMP	105		
318+43	3	L	12″ PVC	96		
320+66	3	R	15″ CMP	100.22	PA-OF-78-4-10	
325+48	3	L	24″ CMP	107.2	LA-A-9	
328+81	3	R	15″ CMP	102.3	PA-OF-78-6-02	Palo Alto storm drain.
334+44	3	R	24″ CMP	107.5	PA-OF-82-3-08	Palo Alto storm drain.
338+66	3	R	15″ CMP	118.8	PA-OF-82-5-01	Palo Alto storm drain.
340+70	3	L	42″ CMP	112.3	LA-A-10	
342+00	3	L	12″ CMP	114.8	LA-A-11	
347+15	3	L	27″ CMP	?	LA-A-12	Not shown on plans.
356+60	3	R	36″ RCP	127.7		Palo Alto storm drain.
358+78	3	L	15″ CMP	124.6	LA-A-13	
360+54	3	R	12″ RCP	?	LA-A-14	Not shown on plans.

TABLE 3.2
Adobe Creek Storm Drain Outfalls
(continued)

Creek Station	Study Reach	Creek[1] Bank	Drain Size and Type	Invert Elevation	City ID No.	Comments
364+54	3	R	18″ RCP	129.8	LA-A-15	
376+49	4	R	18″ RCP	140.5	LA-A-16	Inside Foothill Expressway culvert.
379+40	5	R	15″ CMP	142.1		
382+33	5	L	18″ CMP	144.76	LA-A-17	
383+00	5	R	8″ CMP	145.0		
383+72	5	R	6″ CMP	150.4		
385+98	5	L	12″ CMP	147.03	LA-A-18	
387+89	5	L	15″ CMP	151.7	LA-A-19	
394+57	5	R	15″ RCP	165.38		
397+76	5	R	(2) 18″ CMP	167.42		
396+00	5	R	18″ CMP	166.5		
398+64	5	L	15″ CMP	169.14	LA-A-20	
399+80	5	R	8″ PVC	169		
401+35	6	L	12″ RCP	?	LA-A-21	Not shown on plans.
405+00	6	R	24″ CMP	171.5		
417+77	6	L	36″ RCP	177.0	LA-A-22	
421+88	6	R	18″ CMP	181.86		
426+50	7	R	12″ CMP	184		
428+50	7	L	4″ PVC	187		
431+40	7	L	6″ Iron	187.8		
432+60	7	L	8″ VCP	191.2		
437+60	7	L	8″ VCP	192		
444+15	7	L	12″ CMP	199.7		
448+13	7	L	12″ RCP	201.79	LA-A-23	
456+00	7	R	30″ CMP	208	LA-A-24	
456+50	7	L	12″ CMP	212		
457+30	8	L	12″ CMP	211.6		Outfall into 84-inch RCP (Manresa Way).
457+47	8	R	12″ CMP	211.6		Outfall into 84-inch RCP (Manresa Way).
467+20	8	L	10″ PVC	224.30		
472+50	8	L	18″ CMP	?	LA-A-25	
473+50	8	L	18″ CMP	236.1		

TABLE 3.2
Adobe Creek Storm Drain Outfalls
(continued)

Creek Station	Study Reach	Creek[1] Bank	Drain Size and Type	Invert Elevation	City ID No.	Comments
477+20	8	L	?	?	LA-A-18A	Not shown on plans.
481+88	8	R	18″ CMP	240.5		
482+00	8	L	15″ CMP	251.13		
484+00	8	L	6″ PVC	252		
485+90	8	L	24″ CMP	259	LA-A-27	
493+16	9	L	27″ RCP	265.05		
503+85	9	L	12″ CMP	285		Interstate 280 drain.
509+40	10	L	12″ PVC	282.96		
510+50	10	R	6″ Aluminum	287		Baseball field drain.
511+65	10	R	10″ RCP	288		Baseball field drain.
511+72	10	L	6″ CIP	288.8		Foothill College.
514+07	10	R	18″ CMP	288.53		Foothill College.
516+35	10	R	24″ RCP	289.96		Foothill College.
517+39	10	L	24″ RCP	295.3		Foothill College.
523+62	10	L	12″ RCP	305.6		
524+00	10	L	18″	308.4		Foothill College.
531+00	10	L	12″	?		Not shown on plans (Foothill College)
536+75	12	L	30″ CMP	322.1		El Monte Road.
551+50	12	R	24″ CMP	347		
551+70	12	R	36″ RCP	345		
565+82	14	L	18″ RCP	375.25		Rhus Ridge Road.
575+30	14	R	15″ CMP	384		
583+20	15	R	21″ CMP	417.7		
583+30	15	L	15″ CMP	413.7		Francemont Avenue.
588+00	15	R	15″ CMP	422		
590+59	15	L	18″ CMP	426.77		Adobe Creek Estates Drive.
592+60	15	R	15″ CMP	427.7		
606+64	15	L	12″ CMP	454.39		
608+80	15	L	12″ CMP	458.5		
622+00	15	R	12″ CMP			Not shown on plans. Station very approximate.

---

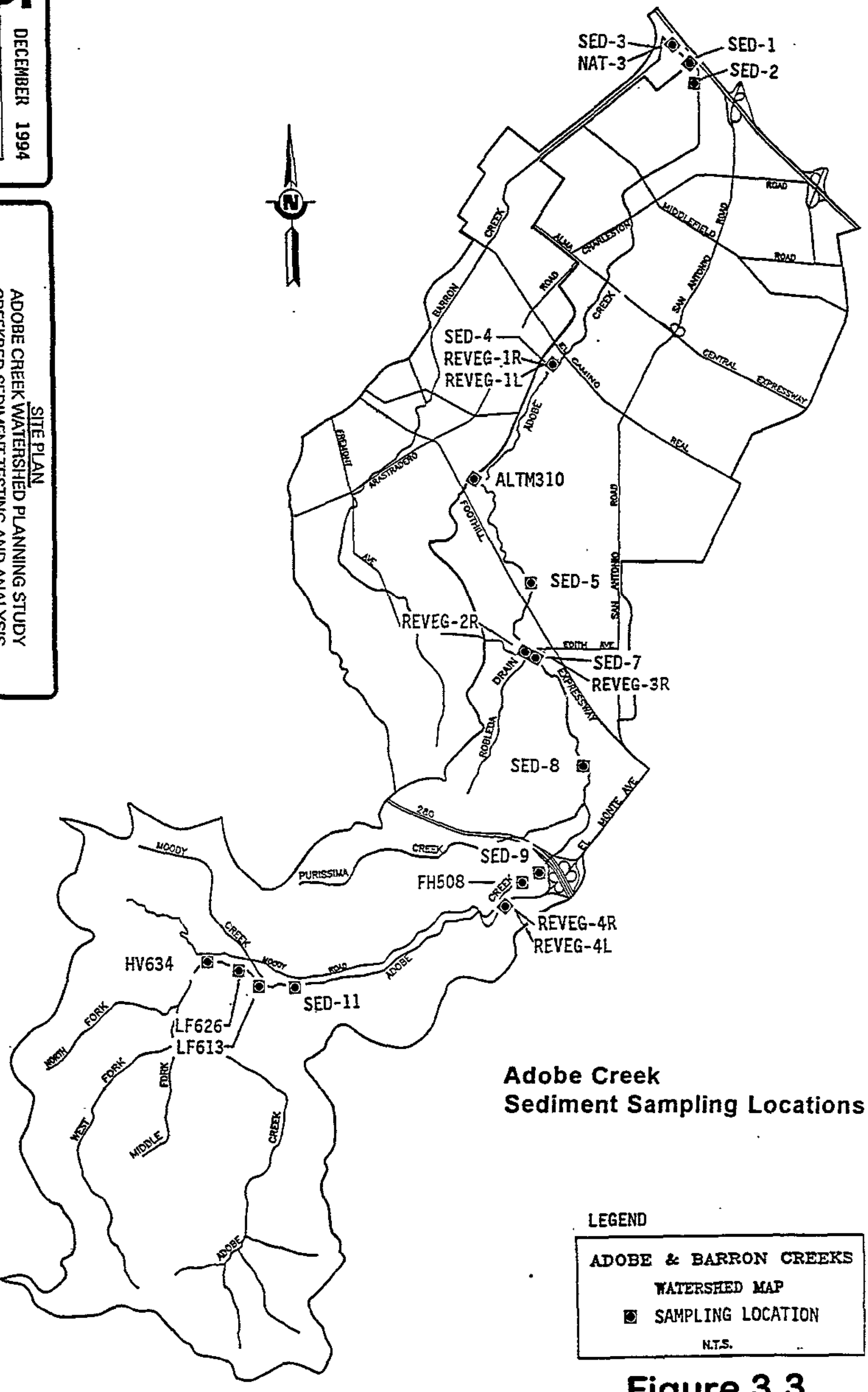
[1] Creek banks are relevant to looking upstream.

TERRATECH

DECEMBER 1994

SITE PLAN

ADOBE CREEK WATERSHED PLANNING STUDY
CREEKBED SEDIMENT TESTING AND ANALYSIS
SANTA CLARA COUNTY, CALIFORNIA



Adobe Creek
Sediment Sampling Locations

Figure 3.3

TABLE 3.3
Summary of Analytical Test Results of Creekbed Sediment Testing on Adobe Creek[1]

Sample Identifier	SED-1	SED-2	SED-3	NAT-3	SED-4	ALTM-3 10	SED-5	SED-7	SED-8	SED-9	FH-508	SED-11	LF-613	LF-626	HV-634
Date	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	10/29/93	10/29/93	10/29/93
Station	132+00	135+00	9+00[2]	9+00[2]	254+00	310+00[3]	368+50	400+00	458+00	505+00	508+00[3]	610+00	613+00[3]	626+00[3]	634+00[3]
METALS															
Antimony	2.1	4.1	5.2	2.5	2.0	4.4	2.0	2.0	3.3	2.1	4.8	2.0	ND[4]	ND	ND
Arsenic	4.2	4.1	5.2	2.5	1.0	ND	ND	2.0	ND	1.1	3.4	2.0	ND	2.6	ND
Barium	154.8	155.2	186.8	210.6	82.7	--[5]	92.5	87.1	90.6	106.0	--	98.0	--	--	--
Beryllium	0.4	0.4	0.5	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.5	0.4	0.3	0.4	0.3
Cadium	ND	ND	2.1	ND	ND	0.3	ND	ND	ND	ND	ND	ND	ND	ND	0.3
Chromium	118.8	147.0	93.4	110.3	102.1	115.5	111.9	121.6	109.4	127.2	169.6	141.4	111.7	121.8	81.9
Cobalt	23.3	28.6	20.8	22.3	18.4	--	20.3	18.2	21.0	24.4	--	23.2	--	--	--
Copper	78.5	71.5	124.5	50.8	38.8	53.6	38.6	41.5	45.3	51.9	65.7	49.5	39.6	46.7	47.3
Lead	87.0	65.3	194.6	6.2	7.1	15.8	5.1	7.1	6.6	8.5	8.2	14.1	3.9	8.5	12.6
Mercury	0.2	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	ND	ND	2.6	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--
Nickel	101.8	116.4	80.4	99.1	81.7	84.0	93.6	91.2	106.1	106.0	148.4	111.1	92.4	101.5	75.6
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	0.7	0.9	ND	0.7	ND	1.2	1.1	ND	0.8	ND	ND	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	97.6	120.5	83.0	89.2	83.7	--	84.4	81.0	82.9	91.2	--	101.0	--	--	--
Zinc	254.5	185.8	518.8	76.8	68.4	66.2	67.1	70.9	76.2	73.1	73.1	68.7	47.7	60.9	69.3

TABLE 3.3
Summary of Analytical Test Results of Creekbed Sediment Testing on Adobe Creek[1]
(continued)

Sample Identifier	SED-1	SED-2	SED-3	NAT-3	SED-4	ALTM-3 10	SED-5	SED-7	SED-8	SED-9	FH-508	SED-11	LF-613	LF-626	HV-634
Date	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	10/29/93	10/29/93	10/29/93
Station	132+00	135+00	9+00[2]	9+00[2]	254+00	310+00[3]	368+50	400+00	458+00	505+00	508+00[3]	610+00	613+00[3]	626+00[3]	634+00[3]
PCBs, PESTICIDES, AND HERBICIDES															
Chlordane	ND	0.18	0.59	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--
DDD, DDE, DDT	0.27	0.027	0.06	ND	0.008	--	ND	ND	ND	ND	--	ND	--	--	--
Other 8080 Pesticides	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCBs	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--
Chlorinated Herbicides	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--
PETROLEUM HYDROCARBONS															
Combined PNAs[6]	ND	6	17	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--
TPHD[7]	610	69	300	29	57	17	37	34	24	22	25	15	15	6	37
TRPH[8]	1,000	580	1,600	50	40	--	80	40	ND	100	--	50	--	--	--

[1] All concentrations in milligrams per kilogram

[2] On Barron Creek

[3] Analyses performed by Curtis & Tompkins, Ltd.

[4] ND = not detected above laboratory's threshold of reliable quantification

[5] "--" = not analyzed

[6] PNA = polynuclear aromatics

[7] TPHD = total petroleum hydrocarbons as diesel

[8] TRPH = total recoverable petroleum hydrocarbons

TABLE 3.4
Summary of Typical Metals Concentrations[1] and Standards

Metal	Puget Sound Criteria[2]	Adobe Creek Range (dry weight)	Calabazas Creek[3]	Guadalupe & South Bay Stations[3]	Alameda Stations[3]	East Bay Rural[4]	East Bay Surburban[4]	East Bay Urban[4]	Naturally Occurring[5]	TTLC/STLC[6]	DTSC PEA[7]
Antimony		**ND - 5.2**				0.3-1	0.4 - 0.8	0.8 - 1.4	0. 6 -10	500/15	500/0.9
Arsenic	57	**ND - 5.2**	24 - 44	0.1 - 1.9	0.99 - 13	1.7 - 3.9	1.4 - 6.0	1.1 - 6.3	1.0 - 40	500/5	1,000/2
Barium		**83 - 211**				51 - 141	52 - 176	42 - 153	100 - 3,500		70,000/100
Beryllium		**0.3 - 0.5**				0.2	0.3 - 0.6	0 1	0.1 - 40	75/0.75	7,000/10
Cadmium	5.1	**ND - 2.1**	1	0.12 - 1.9	0.076 - 0.87	0.06 - 0 15	0.09 - 0.15	0.16 - 3.32	0.01 - 7.0	100/1	1,000/2
Chromium	260	**36 - 160**	ND	120 - 230	29 - 104	12 - 25	17 - 47	21 - 53	5.0 - 3,000	2,500/560	1E6/2,000
Cobalt		**8 - 23**	18 - 50			6.1 - 6.8	14 - 16	5.6 - 8.8	1.0 - 40		
Copper	390	**38.6 - 124.5**	25 - 397	39 - 81	30 - 90	5.2 - 12	23 - 29	24 - 215	2.0 - 100	2,500/25	
Lead	450	**3.4 - 194.6**	24 - 53	18 - 200	6 - 3,120	10.8 - 14 5	14.5 - 20.4	192 - 806	2.0 - 200	1,000/5	2,000/58
Mercury	0.41	**ND - 0.5**	0.02 - 0.12	0.09 - 0.55	ND - 0.98	0.05- 0.12	0.07 - 0.26	0.37 - 1.58	0.01-0.08	20/0 2	400/0.7
Molybdenum		**ND - 2.6**				0.2 - 0.6	0.3 - 0.5	0.2 - 4.6	0.2 - 5.0		
Nickel		**75.6 - 198.4**	73 - 2,247	65 - 150	28 - 169	13 - 30	24 - 66	27 - 58	5.0 - 1,000	2,000/20	20,000/40
Selenium		**ND**	ND	0.12 - 0.41	ND - 0.6	0 3 - 1.1	0.4 - 0.8	0.3 - 1	0.1 - 2.0	100/1	4,000/7
Silver	6.1	**ND - 1.2**	ND	1.4 - 2.9	0.024 - 0 22	0.1 - 0.3	0.1 - 0.3	0.6 - 1.6	0.1 - 5	100/5	4,000/7
Thallium		**ND**				0.5 - 1.5	0.6 - 1.5	0.5 - 1.5	0.1 - 12	700/7	100/0.2
Vanadium		**81 - 120.5**				10 - 14	23 - 39	15 - 36	20 - 500		9,000/10
Zinc	410	**47.7 - 254.5**	69 - 185	100 - 400	52 - 345	36 - 49	52 - 72	155 - 1,050	10 - 300	5,000/250	200,000/400

[1] All concentrations shown in milligrams per kilogram

[2] Washington State Department of Ecology, 1991

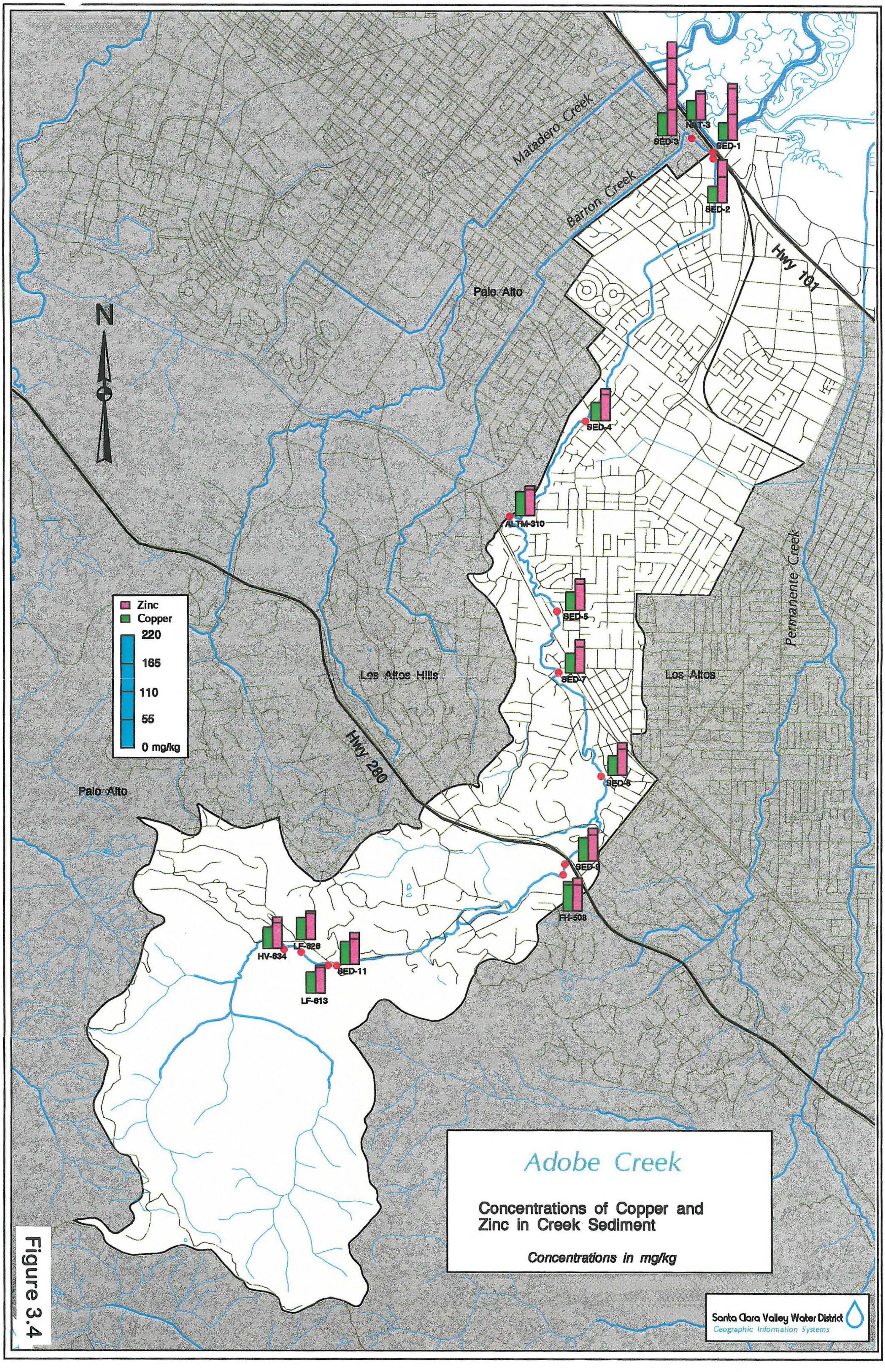
[3] Woodward-Clyde Consultants, 1992

[4] Bryden et. al , 1991

[5] Dragun, 1988

[6] TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration

[7] Department of Toxic Substances Control, *Preliminary Endangerment Assessment* (June 22, 1990), "chronic" soil ingestion/5-year-old child



Adobe Creek

Concentrations of Copper and Zinc in Creek Sediment

Concentrations in mg/kg

Figure 3.4

The Santa Clara Valley Nonpoint Source Pollution Program has identified that lead concentrations in the environment were highest with transportation and heavy industrial land uses. The Bay Area Air Quality Management Agency has monitored lead concentrations in the air since 1970. This data is presented in Figure 3.5. Since the introduction of unleaded gasoline in 1975, the amount of lead being dispersed into the environment has been reduced.

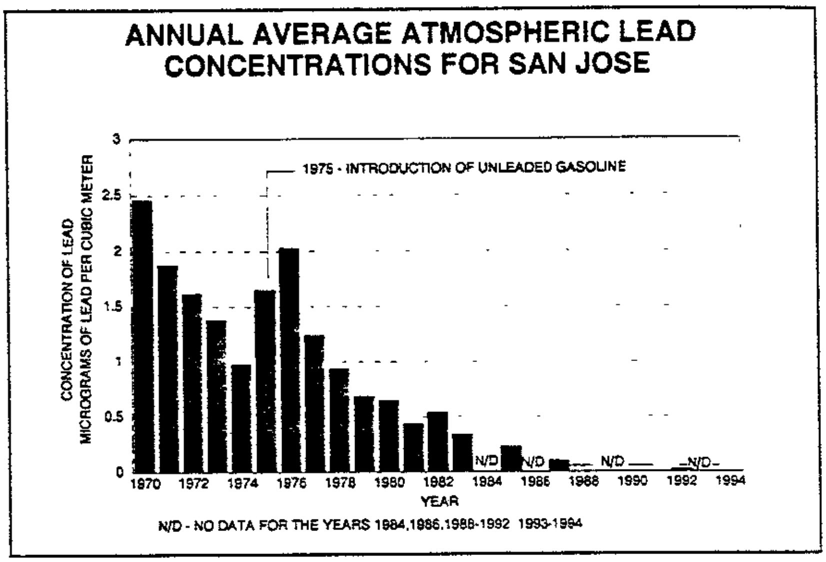


Figure 3.5

The impact of various sources of pollution is magnified when the creek flows are reduced. Longtime creek residents report that in some parts Adobe Creek stops flowing earlier in the year than it did in the past. One of the causes of this phenomenon may be the increase in wells drilled along the creek and in the watershed. When used, the wells remove water from the groundwater aquifer that supplies the creek flow. The end result is that when flows from rainfall cease, there is less groundwater inflow to help the creek keep flowing.

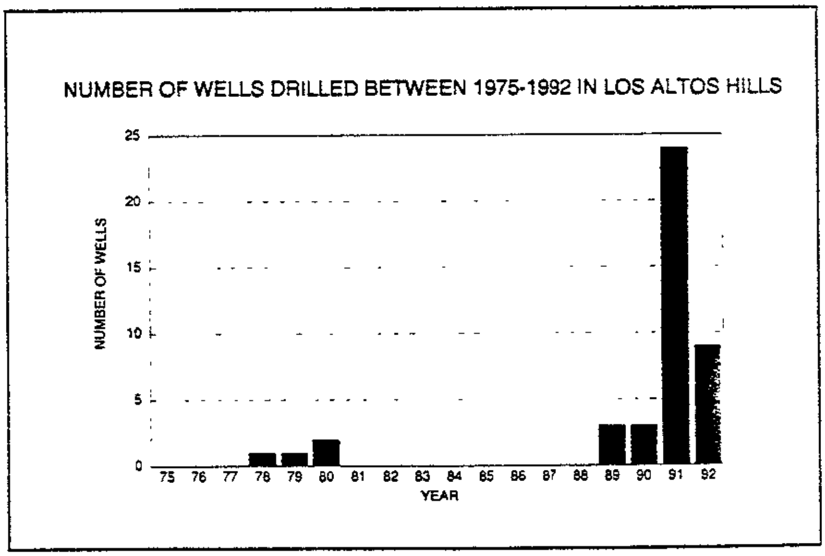


Figure 3.6

As an example, shown on Figures 3.6 and 3.7 are two graphs that depict well drilling activity in the Town of Los Altos Hills for the last 20 years. Figure 3.6 shows that during the two droughts that occurred, well drilling increased substantially. Figure 3.7 shows that, in the last 20 years, the total amount of wells in the Town of Los Altos Hills has doubled. While wells are not the only influencing factor in after-winter creek flows, they can have an effect.

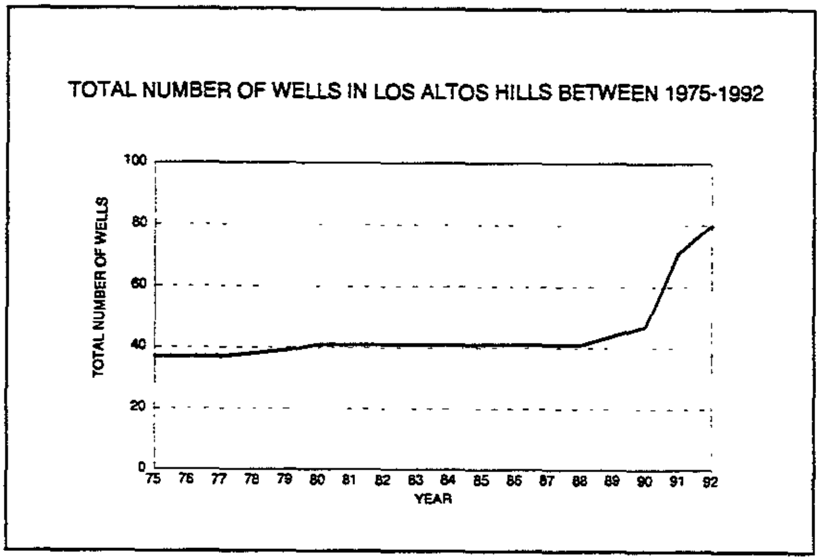


Figure 3.7

HISTORIC FLOODING PROBLEMS

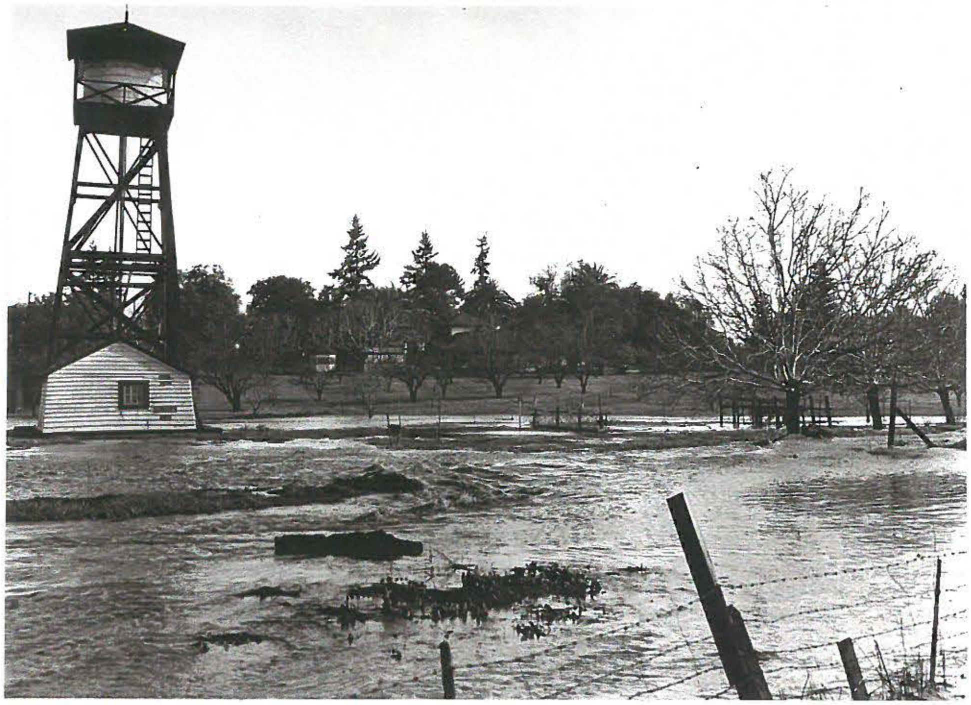
Adobe Creek has a history of flooding and erosion which adversely affects the safety and security of the residents and businesses within its floodplain. In 1952 and 1955, flooding occurred near West Edith Avenue (a picture taken in 1952 is presented in Figure 3.8). In 1955, serious bank erosion and the formation of a temporary new channel in the area now occupied by Foothill College resulted in large damages claimed by a limited number of residents. Total losses from flooding and flood-related damages for Adobe Creek, due to the storm of 1955, were $86,800 (1955 dollars): $15,000 for agricultural, $70,900 for residential, and $900 for nonresidential damages. The major portion of the damage to residential property was attributed to bank erosion. Storms of January 1963 caused the flooding of Adobe Creek Lodge, the area now developed as the Adobe Creek Estates Subdivision. On January 21-24 of 1967, local drainage in Palo Alto backed up due to high flows in Adobe Creek and caused the flooding of streets and front yards. Minor erosion damage and tree removal during the storm of January 13-17 of 1978, resulted in $20,000 worth of flood damages.

RECENT FLOODING PROBLEMS

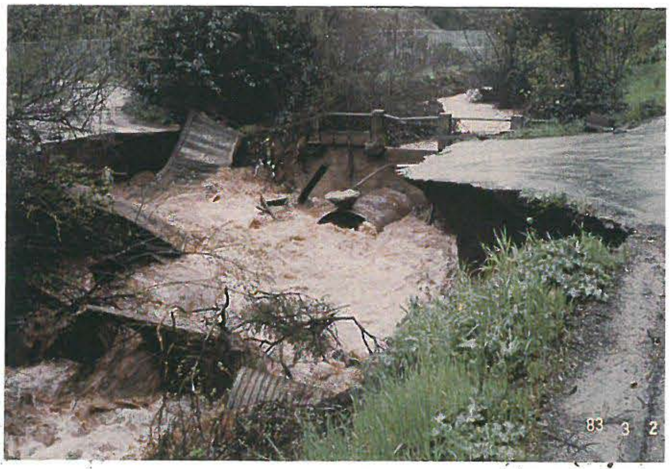
More recently, flooding has occurred in 1980, 1982, twice in 1983, 1986, 1995, and in 1998. Photographs of flooding for some of these six occurrences are shown on Figure 3.8. Representative floodplains are shown on Figures 3.9, 3.10, 3.11, 3.12, and 3.13.

From these maps, one can discern a pattern of recurrent flooding in several locations. Waters flooded the Garden House at Shoup Park in Los Altos during the storms of February 13-22 of 1980, January 3-5 of 1982, and January 22-30 of 1983. Emergency sandbagging was necessary to mitigate damage to the facility and pumps were used to empty the basement during the storm of January 22-30 of 1983. After being flooded again in 1986, the City of Los Altos constructed a short floodwall behind the building. In 1995 and 1998, Shoup Park and the Garden House were flooded again when floodwaters backflowed through storm drains.

FIGURE 3.8
Photographs Flooding on Adobe Creek



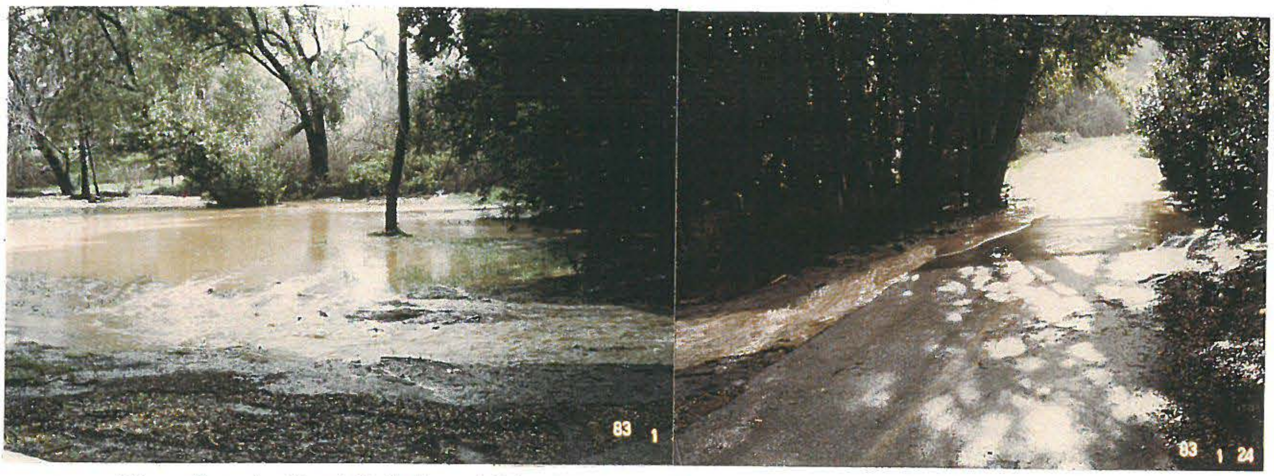
Flooding Upstream West Edith Avenue (from Fremont Road) January 1952 (P742-12)



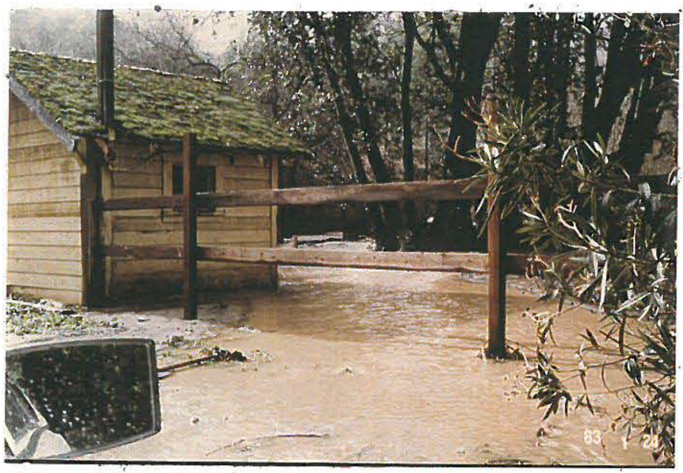
Francemont Ave. During 1983 Flood (S741-49)

Francemont Ave. Prior to 1983 Flood (P2892-5)

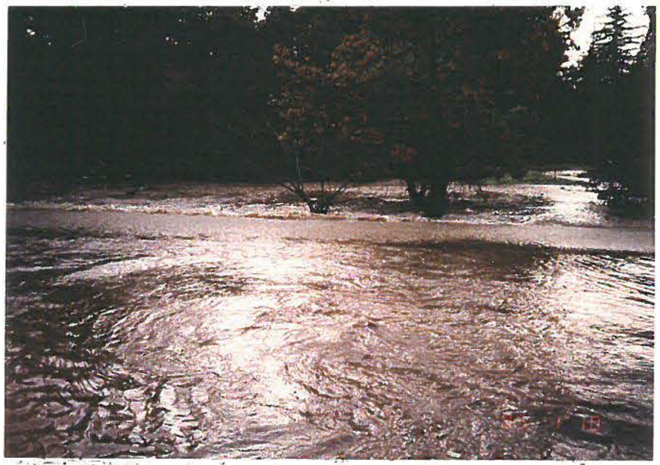
FIGURE 3.8
(continued)



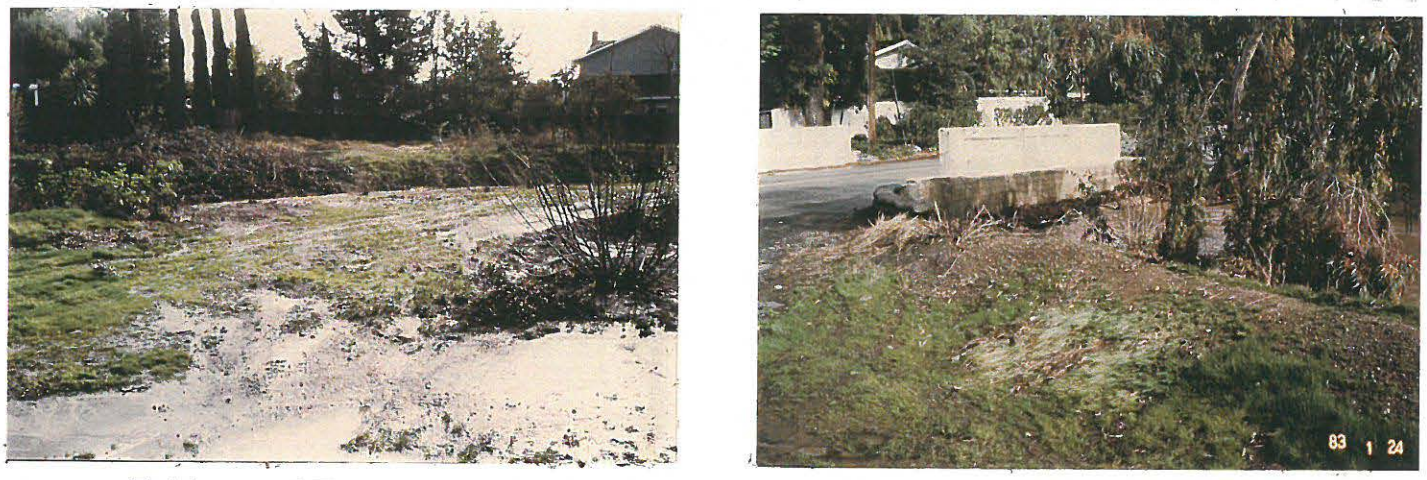
Flooding in the Vicinity of Rhus Ridge Road January 1983 (S676-15 & 16)



Near Rhus Ridge Road January 1983 (S676-14)

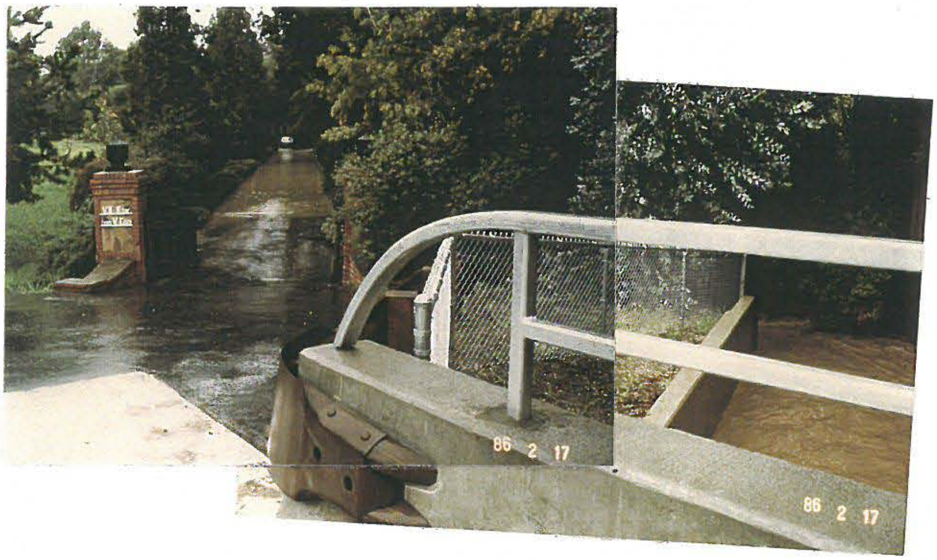


Flooding Near Fremont Road 1995 (S3885-22)



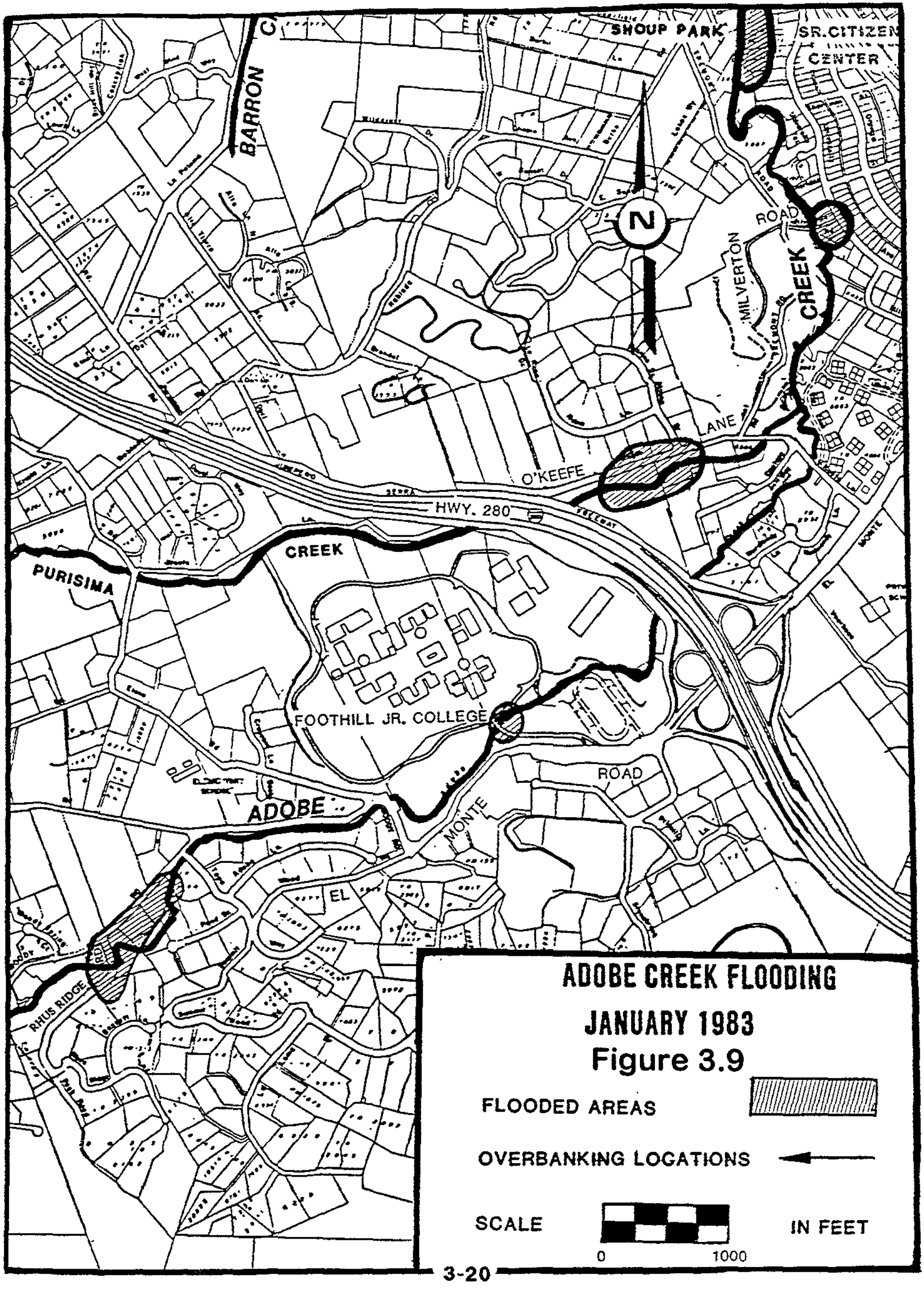
Evidence of Flooding Upstream of West Edith Avenue January 1983 (S676-18 & 19)

FIGURE 3.8
(continued)



Flooding Upstream of West Edith Avenue - February 1986 (S1693-1 & 2)

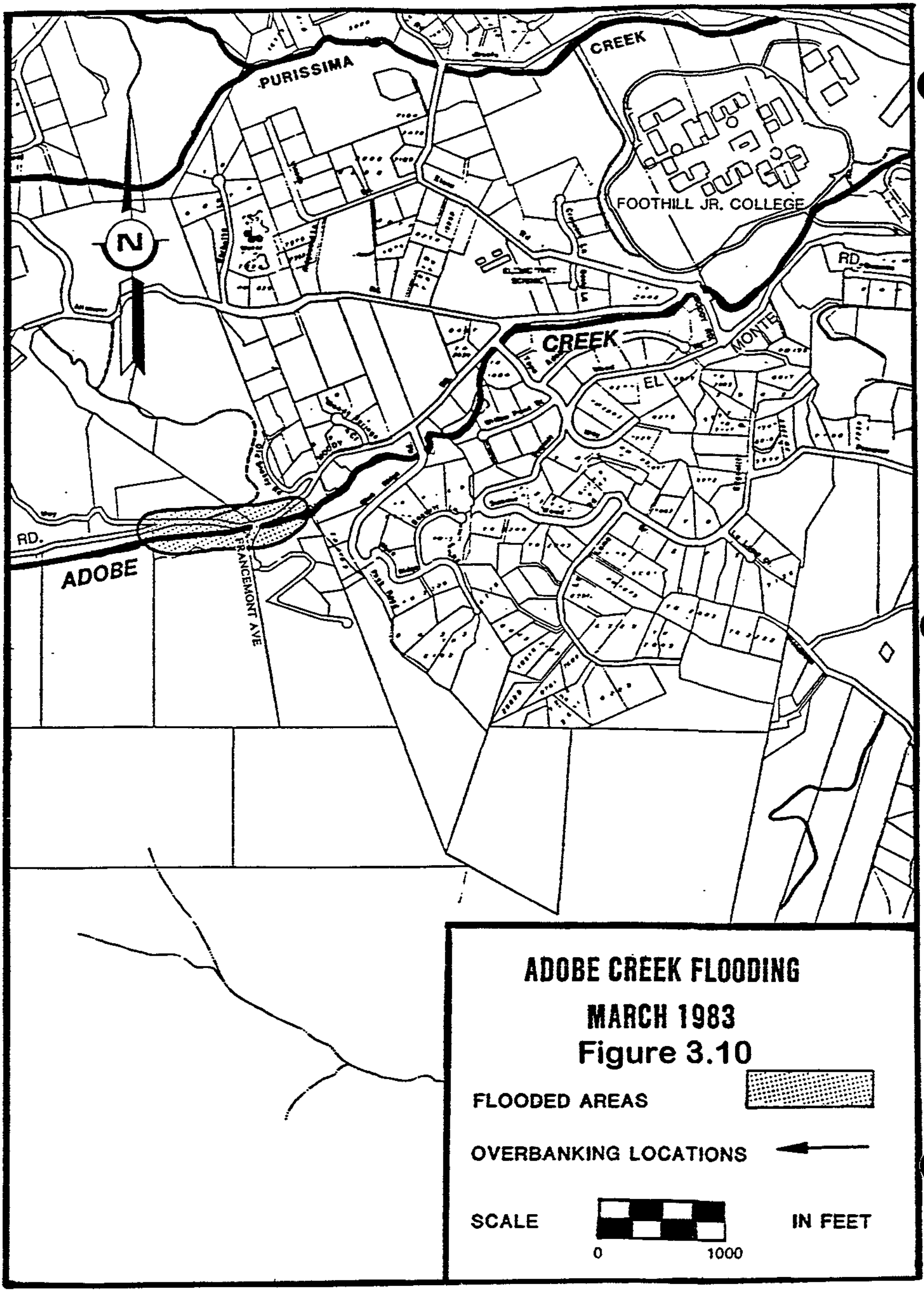
Flooding From Robleda Drain (Tributary to Adobe Creek) Upstream West Edith Avenue January 1995 (Clockwise from left S3885-19, S3885-18, S3885-17, S3885-21)



ADOBE CREEK FLOODING

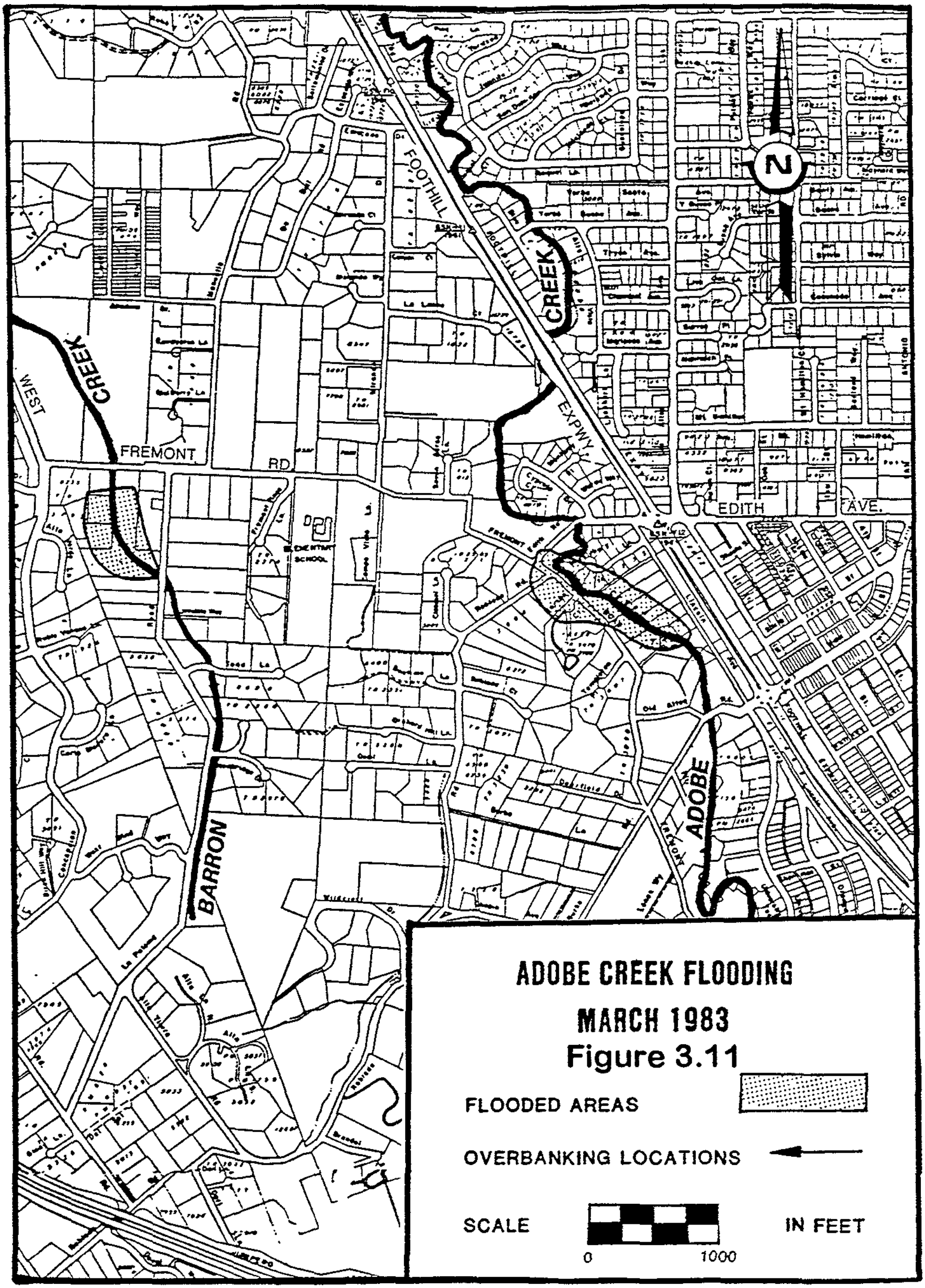
JANUARY 1983

Figure 3.9

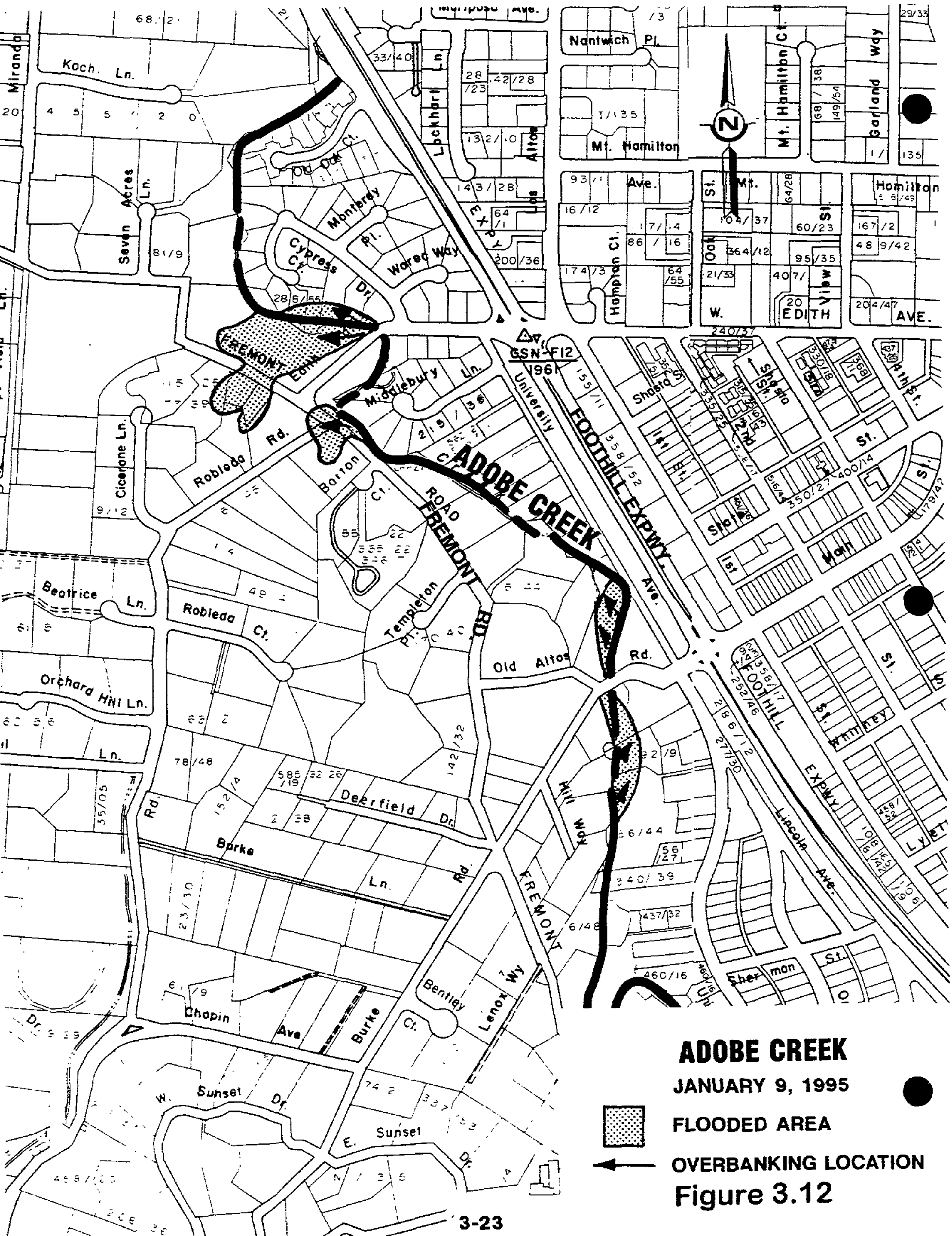


ADOBE CREEK FLOODING MARCH 1983

Figure 3.10



ADOBE CREEK FLOODING
MARCH 1983
Figure 3.11



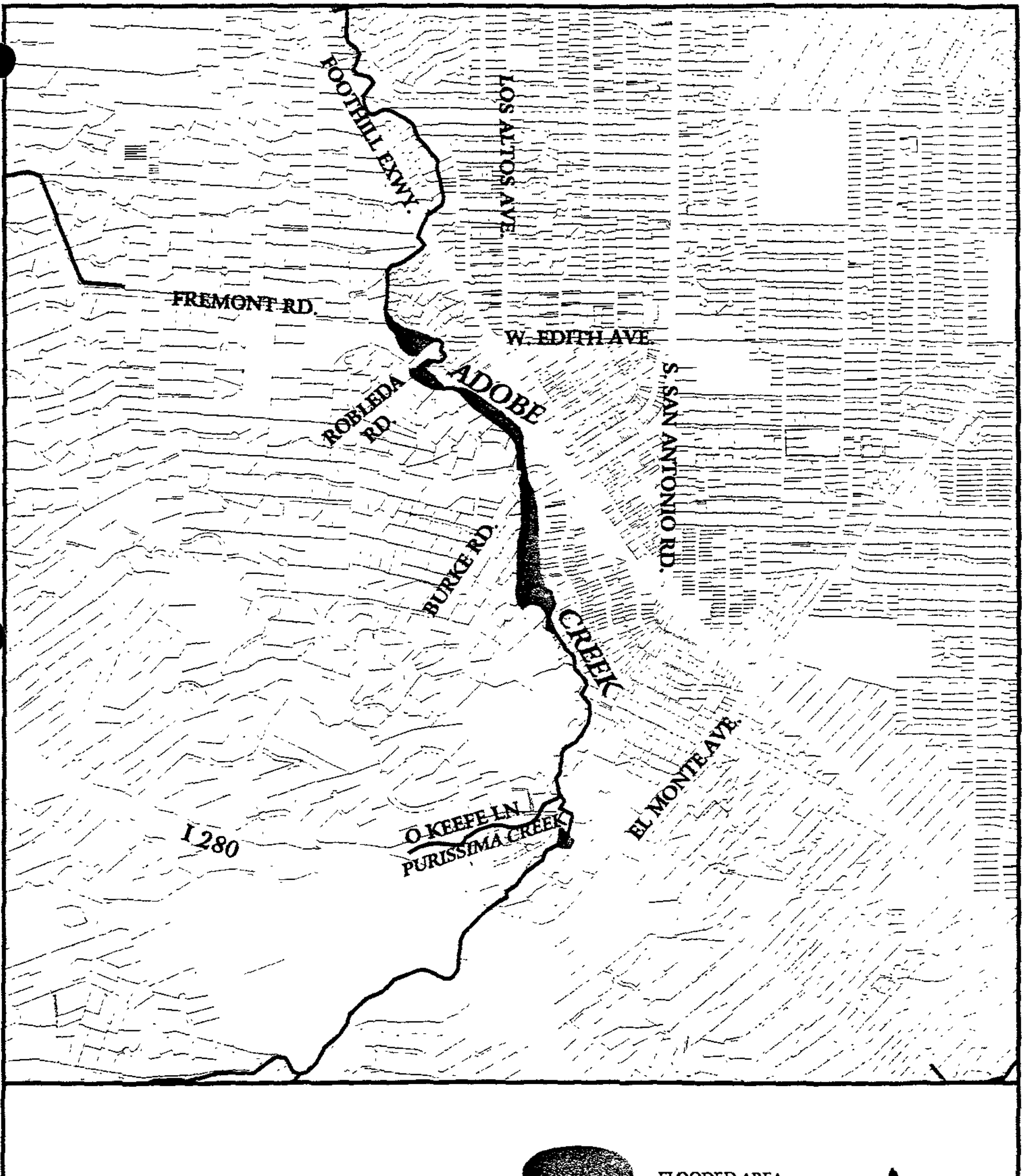
ADOBE CREEK

JANUARY 9, 1995

▨ FLOODED AREA

← OVERBANKING LOCATION

Figure 3.12



ADOBE CREEK FLOODING
FEBRUARY 1998

Figure 3.13

The storms of 1983, 1986, 1995, and in 1998 caused overbanking and flooding in the vicinity of West Edith Avenue. Flooding was reported for the Adobe Creek Lodge area for the storms of February 13-22 of 1980, and February 28 through March 4 of 1983. Those storms and the one of January 22-30 of 1983, caused flooding along Moody Road at the Rhus Ridge Road culvert. During the February 28-March 4, 1983 storm, the creek crossing at Francemont Avenue was washed out.

In January 9-10 of 1995, Robleda Drain, a tributary of Adobe Creek which enters Adobe Creek approximately 700 feet downstream of West Edith Avenue, flooded when it became blocked with debris. The floodwaters flowed through two houses, over Fremont Road, and into over two acres of property adjacent to Adobe Creek. Overbanking from Adobe Creek downstream of West Edith Avenue added to the flooding already on the property from the Robleda Drain. This flooding and the high creek waters in Adobe Creek caused approximately 100 feet of wooden retaining wall adjacent to the creek to fail during the storm.

During the same January 1995 storm, floodwaters overbanked in: the Redwood Grove, Shoup Park, upstream and downstream of Burke Road, and upstream and downstream of West Edith Avenue.

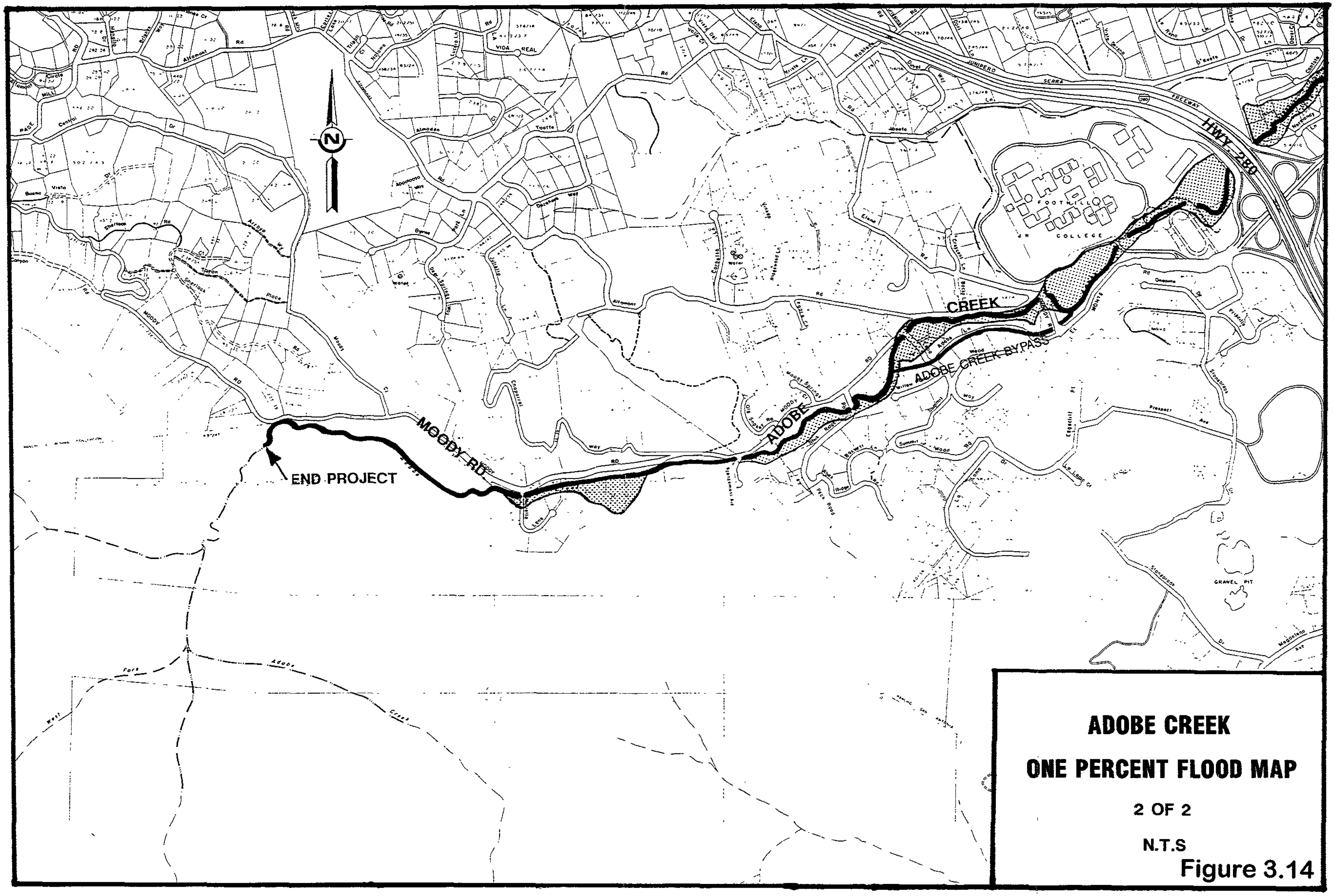
On February 2 and 3, 1998, floodwaters overbanked from 500 feet downstream of West Edith Avenue to upstream of the Redwood Nature Preserve, a distance of approximately 6,000 feet. Most of the flooding occurred in backyards, open land, or parks. However, several homes in that reach and the Garden House at Shoup Park were flooded. A wooden vehicle bridge at the Redwood Nature Preserve was dislodged from its footings and floated approximately 30 feet downstream.

Other incidences of flooding have been reported for: Burke Road in January of 1982 and in February of 1986; at Yerba Buena Avenue sometime in 1982, and in February of 1983; at O'Keefe Lane in January of 1983, and near Cypress Drive in March 1983.

There have been many places where changes have been made in the creek channel alignment. In all of the cases below, the creek was moved from a meandering alignment across a historic floodplain to a straightened channel at the edge of a development. In the late 1950s, during the development of the Pink Horse Ranch Subdivision near Tepa Way in Los Altos Hills, the creek was moved to an alignment adjacent to Moody Road. When Foothill College was constructed in the early 1960s, the creek was moved from the base of the hill on the south side of the campus approximately 300 feet over to the bottom of the bank below El Monte Road. In the mid 1960s, before development of the Middlebury Manor Subdivision (upstream of West Edith Avenue in Los Altos), the creek was moved over approximately 60 feet. There are also numerous other places in the study reach where the creek has been moved in the past. At all these locations moving the creek has either aggraded or caused flooding and erosion problems.

DESCRIPTION OF THE 1 PERCENT FLOOD

The 1 percent flood is defined as having an average frequency of occurrence of once in 100 years or as having a 1 percent chance of occurrence in any given year (see Appendix H). Figure 3.14 depicts the areas subject to flooding from a 1 percent event. This map is based on Flood Insurance Studies sponsored by FEMA in 1979-1980 and is supplemented with information obtained from recent surveys and hydraulic modeling performed by the District for this study.



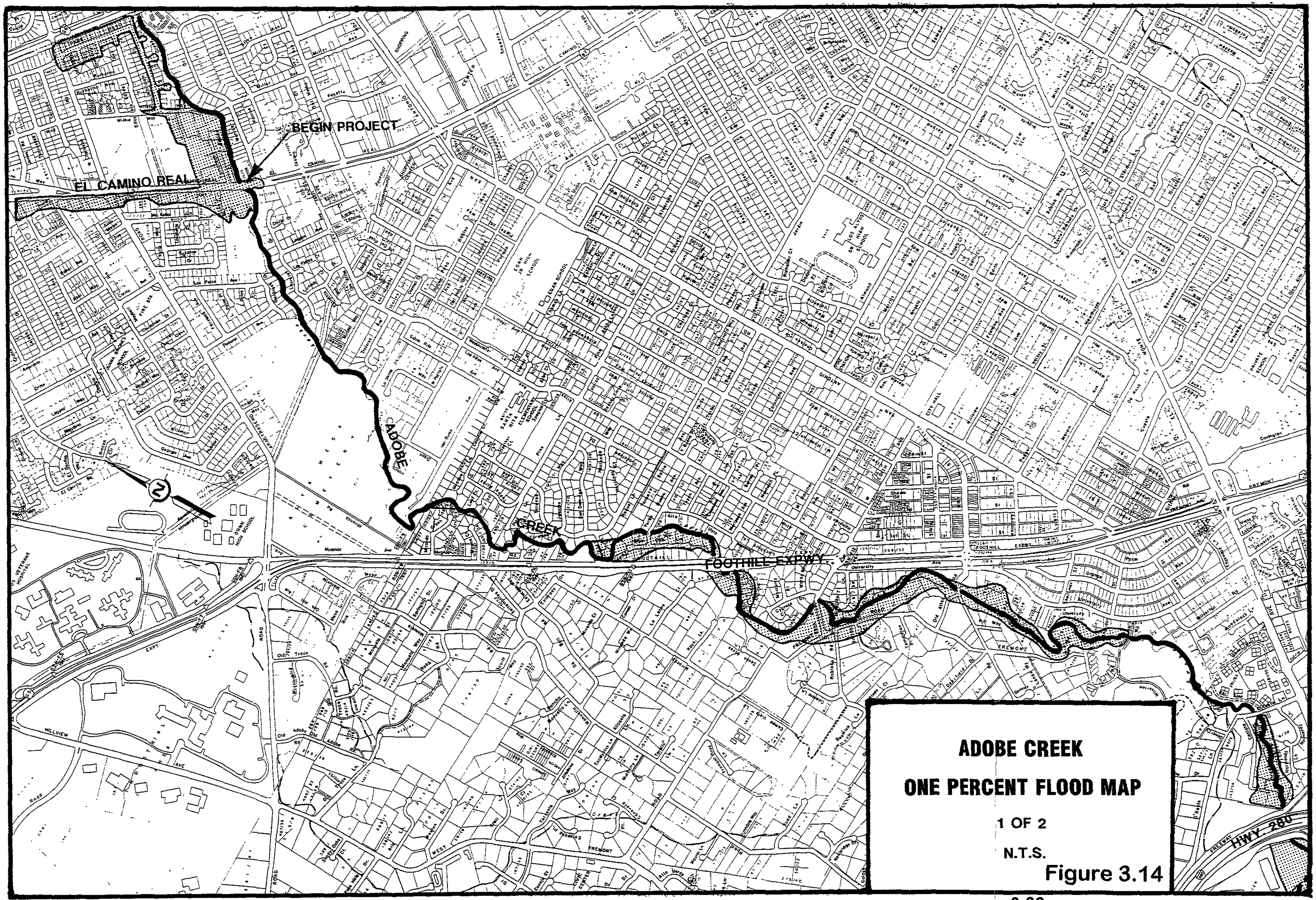
ADOBE CREEK

ONE PERCENT FLOOD MAP

2 OF 2

N.T.S

Figure 3.14



ADOBE CREEK

ONE PERCENT FLOOD MAP

1 OF 2

N.T.S.

Figure 3.14

The 1 Percent Flood Map shows flooding near most road crossings. Table 3.5 displays culvert and bridge capacities and their corresponding design flows. Eleven of the nineteen crossings within the study area cannot convey the one percent design flows, with seven incapable of conveying the ten percent (10-year frequency) flows.

Flood problems relating to inadequate culvert and bridge capacities occur at various locations on Adobe Creek. At El Camino Real, the water surface elevation would exceed that of the banks for several hundred feet upstream of the culvert. Consequently, the parking lot of the former Palo Alto Hyatt would flood over and down El Camino Real into 91 residences, 24 businesses, and 9 multi-unit dwellings. Least capable of conveying the 1 percent design flow is the culvert at Yerba Buena Avenue, passing only 720 cubic feet per second (cfs) of the 2,900 cfs 1 percent design flow. As a result, all of Blue Oak Lane would be submerged with flows crossing over Yerba Buena Avenue flooding 16 homes. Upstream of Foothill Expressway, a backwater would develop overbanking both sides of the creek near Old Oak Court flooding eight houses. At West Edith Avenue, inadequate channel capacity downstream causes overbanking to occur upstream of the bridge flooding 12 homes. The bridge capacity of Burke Road is approximately 35 percent of the 1 percent design flow. Water flows over the surface of Burke Road and overbanks both banks upstream flooding three homes. With nearly the 1 percent design flow capacity, Manresa Way would experience very little flooding. At O'Keefe Lane, the water would overbank both sides of the creek and flood O'Keefe Lane. Six houses upstream of O'Keefe Lane would be flooded. Inadequate creek capacity upstream of the Interstate 280 culvert would flood the Foothill Community College maintenance yard and portions of the College baseball field. The inadequate capacity of the double-pipe culvert at the entrance to the College, aggravated by the presence of a flow constricting footbridge downstream, would cause flooding of a parking lot on the left side of the creek downstream of the entrance road, over the surface of the entrance road, and would isolate the local fire station located on the hill above the floodplain. Upstream of the College entrance road, Parking Lot B of the College would be submerged by flows from over El Monte Road. Flood flows would break out upstream of Tepa Way and would reenter the creek on the downstream side of the culvert. Likewise, flows would cross over Rhus Ridge Road. With the new (1992) culvert at Francemont Avenue and the channel excavation upstream that was done as part of the Adobe Creek Estates subdivision, the 1 percent flows within this reach stay contained in the creek channel. However, at Murietta Lane, there would be minor flooding.

Inadequate channel capacity at various locations of Adobe Creek would result in flooding of the immediate area along the top of bank during a 1 percent event. In the vicinity of Miranda Green Court, flood flows would overbank both sides of the creek flooding the immediate area and three homes. Downstream of Yerba Buena Avenue, near Raquel Court, flood flows would overbank and combine with flows from the overbanking of the Yerba Buena Avenue culvert flooding four houses on Raquel Court. Other areas which have inadequate channel capacity include: between West Edith Avenue and Manresa Way; immediately upstream and downstream of Interstate 280; the creek channel adjacent to Parking Lot B of Foothill Community College; and between Rhus Ridge Road and approximately 500 feet downstream of Murietta Lane. Flooding due to these inadequate channel capacity locations is generally confined to the immediate area adjacent to the creek banks.

About 220 structures would be flooded during the 1 percent flood on Adobe Creek. Flood damages would be approximately $2.7 million (see Table 3.6).

Erosion causes trees and other debris to be introduced into the creek flow and block culverts. Gravel and soil particles introduced to the creek flow would settle in areas of low flow velocities, reducing the channel capacity by raising the channel bottom.

TABLE 3.5
Adobe Creek
El Camino Real to Study Limits
Design Flows and Existing Culvert/Bridge Capacities

Location	1% Flow	10% Flow	Capacity[1] Culvert	Capacity[1] Creek
El Camino Real	2,900	1,600	2,200	2,340
Footbridge at Hetch Hetchy	2,900	1,600	*	*
Footbridge at California Water Station	2,900	1,600	**	—
Yerba Buena Avenue	2,900	1,600	720	600
Private Footbridge Station 374+63	2,900	1,600	**	—
Foothill Expressway	2,700	1,400	1,570	1,420
West Edith Avenue	2,700	1,400	*	1,580
Burke Road	2,700	1,400	920	350
Footbridge at Redwood Grove	2,700	1,400	**	—
Traffic Bridge Station 442+27	2,700	1,400	**	—
Manresa Way	2,700	1,400	*	2,350
O'Keefe Lane	2,000	1,100	830	400
Interstate 280	2,000	1,100	*	850
Footbridge at Baseball Field (Foothill College)	2,000	1,100	**	—
Culvert at Baseball Field (Foothill College)	2,000	1,100	600	1,430
Footbridge at Parking Lot D (Foothill College)	2,000	1,100	**	—
Foothill College Entrance Road Culvert	2,000	1,100	840	890
El Monte Road	1,100[2]	1,100	*	490
Private Footbridge Station 540+51	1,100[2]	1,100	**	—
Private Footbridge Station 543+45	1,100[2]	1,100	**	—
Tepa Way	1,100[2]	1,100	710	480
Rhus Ridge Road	2,000	1,100	1,170	650
Private Footbridge Station 580+21	2,000	1,100	**	—
Francemont Avenue	2,000	1,100	*	*
Adobe Creek Lodge Road	1,800	960	*	*
Bellucci Drive	1,800	960	*	*
Private Bridge Station 548+97	1,800	960	**	—
Murietta Lane	1,800	960	*	1,370
Hidden Villa Entrance Road	1,800	960	310	370

[1] Culvert capacities are defined as the quantity of flow at which point the water surface reaches the upstream soffit. Creek capacities are for the creek just upstream of the corresponding bridge/culvert.

[2] 900 cfs in bypass channel.

* Capacity exceeds existing 1 percent flow rate.

** Footbridge under 1 percent capacity but has negligible effect on 1 percent floodplain size.

TABLE 3.6
Waterways Management Model
1 Percent Flood Damage Report

Adobe Creek
El Camino Real to Upstream Moody Road

Land Use	Area Flooded (Acres)	Number of Buildings	Direct Structure Damage ($1,000)	Direct Content Damage ($1,000)	Indirect Damages ($1,000)	Damage to Farms and Open Land ($1,000)	Total 1% Flood Damages ($1,000)
Single Family Residential	86	190	1,256	376.7	245	0	1,877
Multi Residential	0	0	0	0	0	0	0
Mobile Home	0	0	0	0	0	0	0
Commercial	22	26	189	378	198	0	765
Industrial	1	5	10	26.2	16	0	53
Schools, Public Facilities	0	0	0	0	0	0	0
Open Improved Land	19	0	0	0	0	4	4
Agriculture Land	9	0	0	0	0	0	0
Vacant Land	4	0	0	0	0	0	0
Total[1]	142	221	1,455	780.9	460	4	2,700

[1] Damages calculated in August 1995.

Many of the culverts in the study reach were constructed above the natural grade of the creek. This causes a flat creek bottom slope upstream of the culvert, and sediment to accumulate. Downstream of the culvert, the creek bottom slope becomes very steep causing erosion to occur. This necessitates the use of extensive erosion protection downstream of the culvert. O'Keefe Lane is a good example of this situation.

MAINTENANCE CONCERNS

There are two main maintenance concerns on Adobe Creek in the study reach. They are the lack of a continuous maintenance easement corridor and inadequate access to the creek to perform maintenance. District policy will not allow creek maintenance work where some permanent right of way has not been granted to the District. This would constitute spending public funds on private property (this policy is included in Appendix L). The limited access points to the creek cause maintenance work to be difficult and costly.

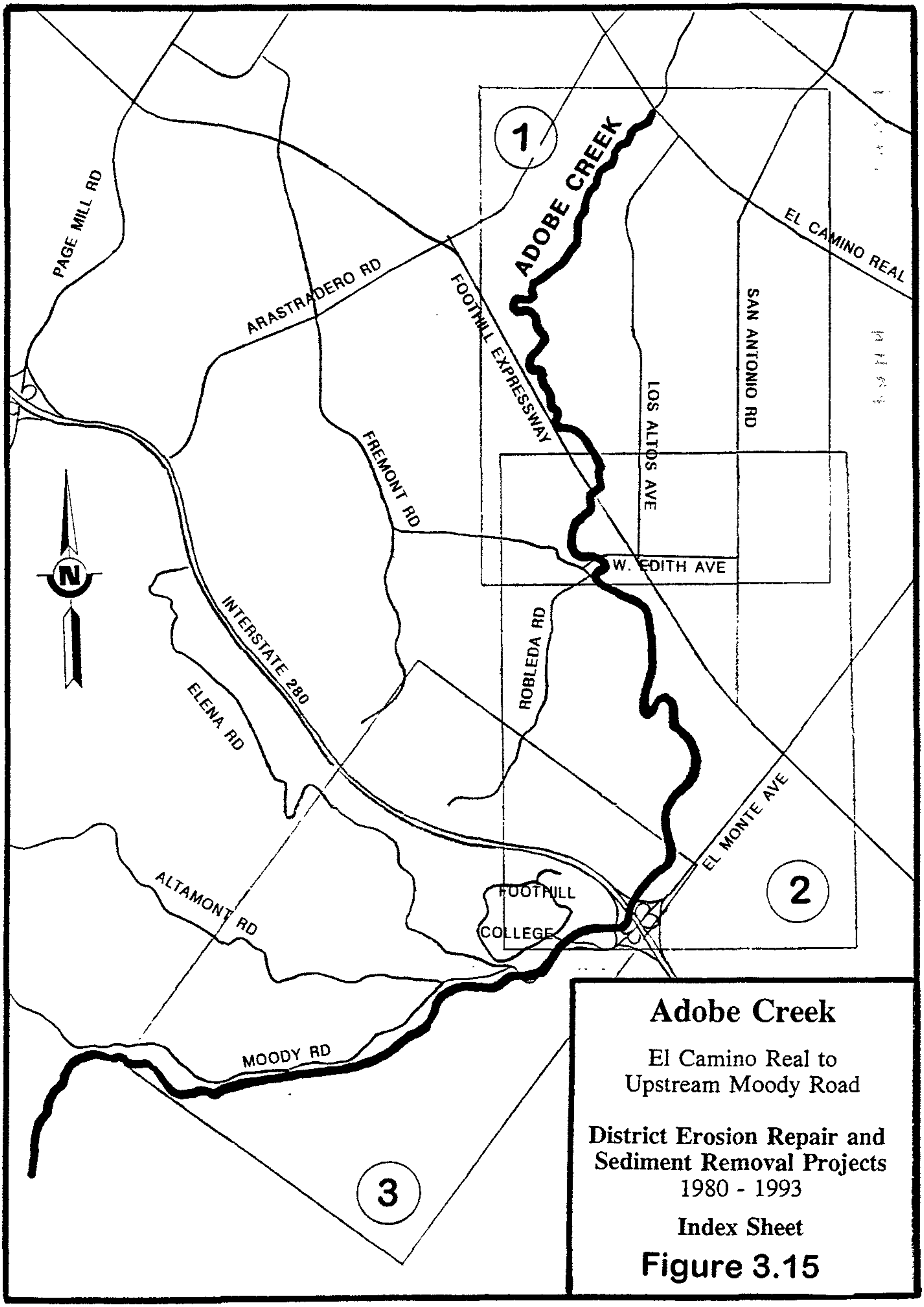
Historically, the maintenance work on Adobe Creek has included creek bank erosion repair, sediment and debris removal, tree work, and vegetation control. The lack of maintenance access can limit the performance of the maintenance work. Without access to the channel bottom certain types of erosion repair cannot be installed and some vegetative debris must be cut up and left to float down the creek, instead of being directly removed. A map showing the location of the District performed erosion repair and sediment removal projects since 1980 is shown on Figure 3.15.

Of the 254 properties that border the creek in the study reach, 110 of them have a District maintenance easement. This is approximately 43 percent.

The maintenance program in the District is restricted by regulatory agencies, primarily the CDFG and the U.S. Army Corps of Engineers (Corps). The CDFG is responsible for the management and preservation of riparian habitats, and often these habitats are required to be partially removed in order to maintain channel capacity and to perform erosion control work. The CDFG permitting authority comes from the California State Fish and Game Code, Sections 1601 and 1603—Streambed Alteration Agreements. These regulations are described in the Project/Programs chapter of this report and in the project EIR.

In the past, individual CDFG streambed alteration permits were required for all maintenance work. In August 1990, a Memorandum of Understanding (MOU) concerning routine maintenance activities in improved channels was adopted by the District and the CDFG. The MOU for unimproved channels was adopted in May 1991. These MOUs were developed to streamline the process to allow the routine maintenance of channels. A copy of both MOUs are included as Appendix N. The CDFG still requires individual streambed alteration permits for maintenance work outside the scope of the MOUs.

In addition to the CDFG's MOUs and permits, permits are required by the Corps under Section 404 of the Clean Water Act. This permit affects the placement of fill in the creekbed and to the limits of the ordinary high water. In addition, the Corps has recently decided that sediment and debris removal above mean high water are within their jurisdiction. The District's most recent regional Corps permit expired in June 1994. In the past, the Corps has issued 5-year regional permits for routine maintenance. Recently, the Corps decided that when they issue a new maintenance permit it will be for a 10-year term.



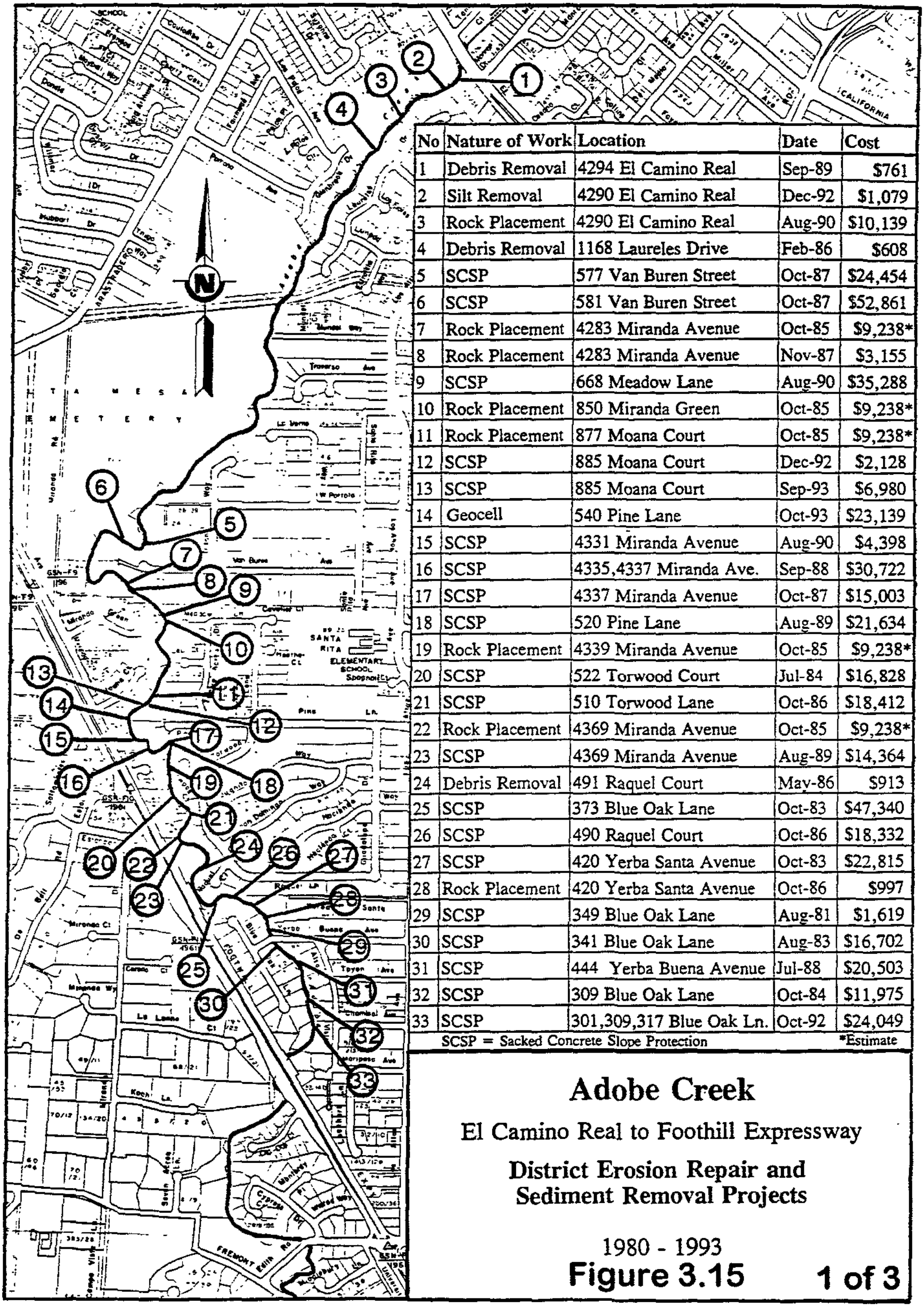
Adobe Creek

El Camino Real to
Upstream Moody Road

District Erosion Repair and Sediment Removal Projects
1980 - 1993

Index Sheet

Figure 3.15



No	Nature of Work	Location	Date	Cost
1	Debris Removal	4294 El Camino Real	Sep-89	$761
2	Silt Removal	4290 El Camino Real	Dec-92	$1,079
3	Rock Placement	4290 El Camino Real	Aug-90	$10,139
4	Debris Removal	1168 Laureles Drive	Feb-86	$608
5	SCSP	577 Van Buren Street	Oct-87	$24,454
6	SCSP	581 Van Buren Street	Oct-87	$52,861
7	Rock Placement	4283 Miranda Avenue	Oct-85	$9,238*
8	Rock Placement	4283 Miranda Avenue	Nov-87	$3,155
9	SCSP	668 Meadow Lane	Aug-90	$35,288
10	Rock Placement	850 Miranda Green	Oct-85	$9,238*
11	Rock Placement	877 Moana Court	Oct-85	$9,238*
12	SCSP	885 Moana Court	Dec-92	$2,128
13	SCSP	885 Moana Court	Sep-93	$6,980
14	Geocell	540 Pine Lane	Oct-93	$23,139
15	SCSP	4331 Miranda Avenue	Aug-90	$4,398
16	SCSP	4335,4337 Miranda Ave.	Sep-88	$30,722
17	SCSP	4337 Miranda Avenue	Oct-87	$15,003
18	SCSP	520 Pine Lane	Aug-89	$21,634
19	Rock Placement	4339 Miranda Avenue	Oct-85	$9,238*
20	SCSP	522 Torwood Court	Jul-84	$16,828
21	SCSP	510 Torwood Lane	Oct-86	$18,412
22	Rock Placement	4369 Miranda Avenue	Oct-85	$9,238*
23	SCSP	4369 Miranda Avenue	Aug-89	$14,364
24	Debris Removal	491 Raquel Court	May-86	$913
25	SCSP	373 Blue Oak Lane	Oct-83	$47,340
26	SCSP	490 Raquel Court	Oct-86	$18,332
27	SCSP	420 Yerba Santa Avenue	Oct-83	$22,815
28	Rock Placement	420 Yerba Santa Avenue	Oct-86	$997
29	SCSP	349 Blue Oak Lane	Aug-81	$1,619
30	SCSP	341 Blue Oak Lane	Aug-83	$16,702
31	SCSP	444 Yerba Buena Avenue	Jul-88	$20,503
32	SCSP	309 Blue Oak Lane	Oct-84	$11,975
33	SCSP	301,309,317 Blue Oak Ln.	Oct-92	$24,049

SCSP = Sacked Concrete Slope Protection *Estimate

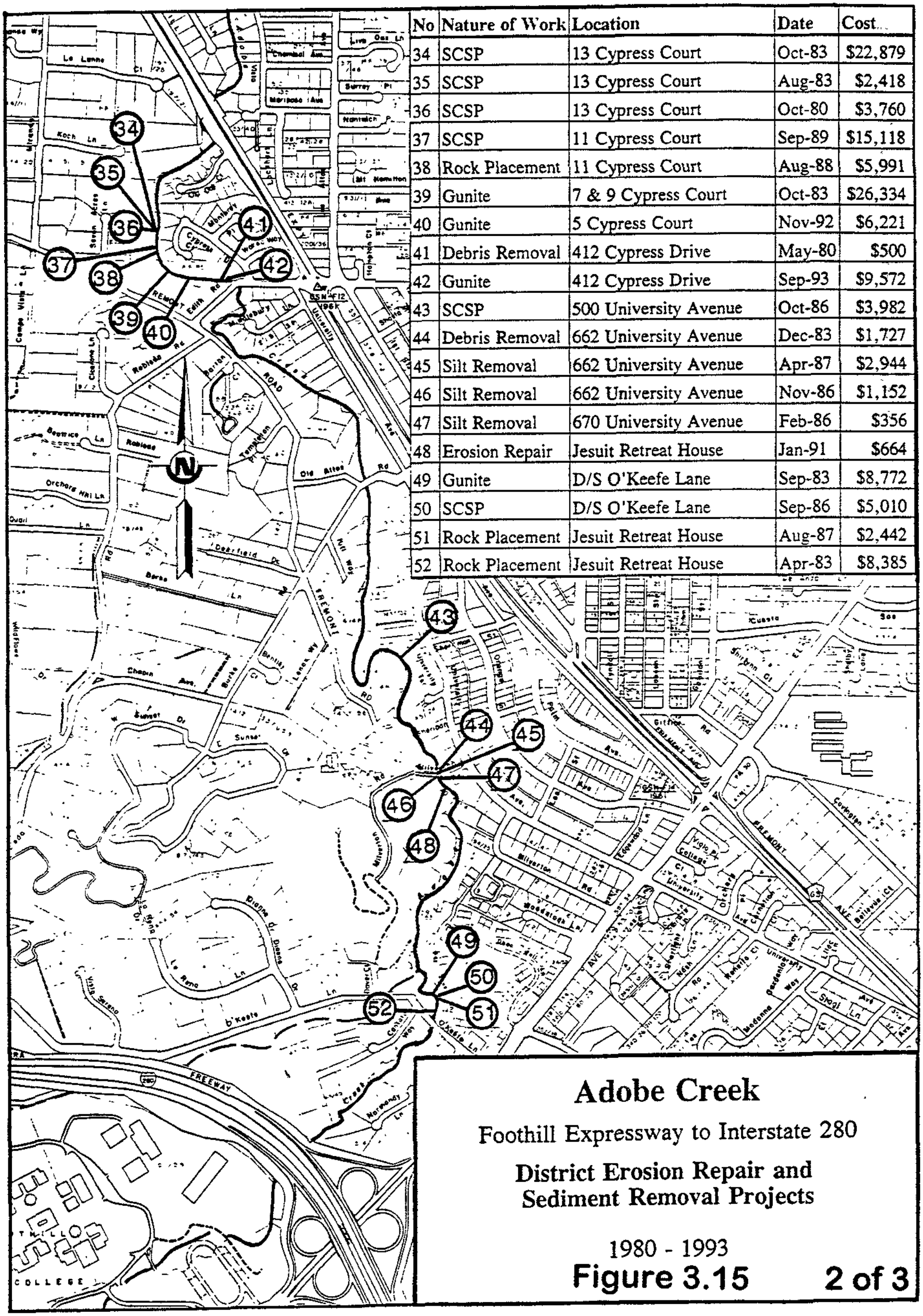
Adobe Creek

El Camino Real to Foothill Expressway

District Erosion Repair and Sediment Removal Projects

1980 - 1993

Figure 3.15 **1 of 3**



No	Nature of Work	Location	Date	Cost
34	SCSP	13 Cypress Court	Oct-83	$22,879
35	SCSP	13 Cypress Court	Aug-83	$2,418
36	SCSP	13 Cypress Court	Oct-80	$3,760
37	SCSP	11 Cypress Court	Sep-89	$15,118
38	Rock Placement	11 Cypress Court	Aug-88	$5,991
39	Gunite	7 & 9 Cypress Court	Oct-83	$26,334
40	Gunite	5 Cypress Court	Nov-92	$6,221
41	Debris Removal	412 Cypress Drive	May-80	$500
42	Gunite	412 Cypress Drive	Sep-93	$9,572
43	SCSP	500 University Avenue	Oct-86	$3,982
44	Debris Removal	662 University Avenue	Dec-83	$1,727
45	Silt Removal	662 University Avenue	Apr-87	$2,944
46	Silt Removal	662 University Avenue	Nov-86	$1,152
47	Silt Removal	670 University Avenue	Feb-86	$356
48	Erosion Repair	Jesuit Retreat House	Jan-91	$664
49	Gunite	D/S O'Keefe Lane	Sep-83	$8,772
50	SCSP	D/S O'Keefe Lane	Sep-86	$5,010
51	Rock Placement	Jesuit Retreat House	Aug-87	$2,442
52	Rock Placement	Jesuit Retreat House	Apr-83	$8,385

Adobe Creek

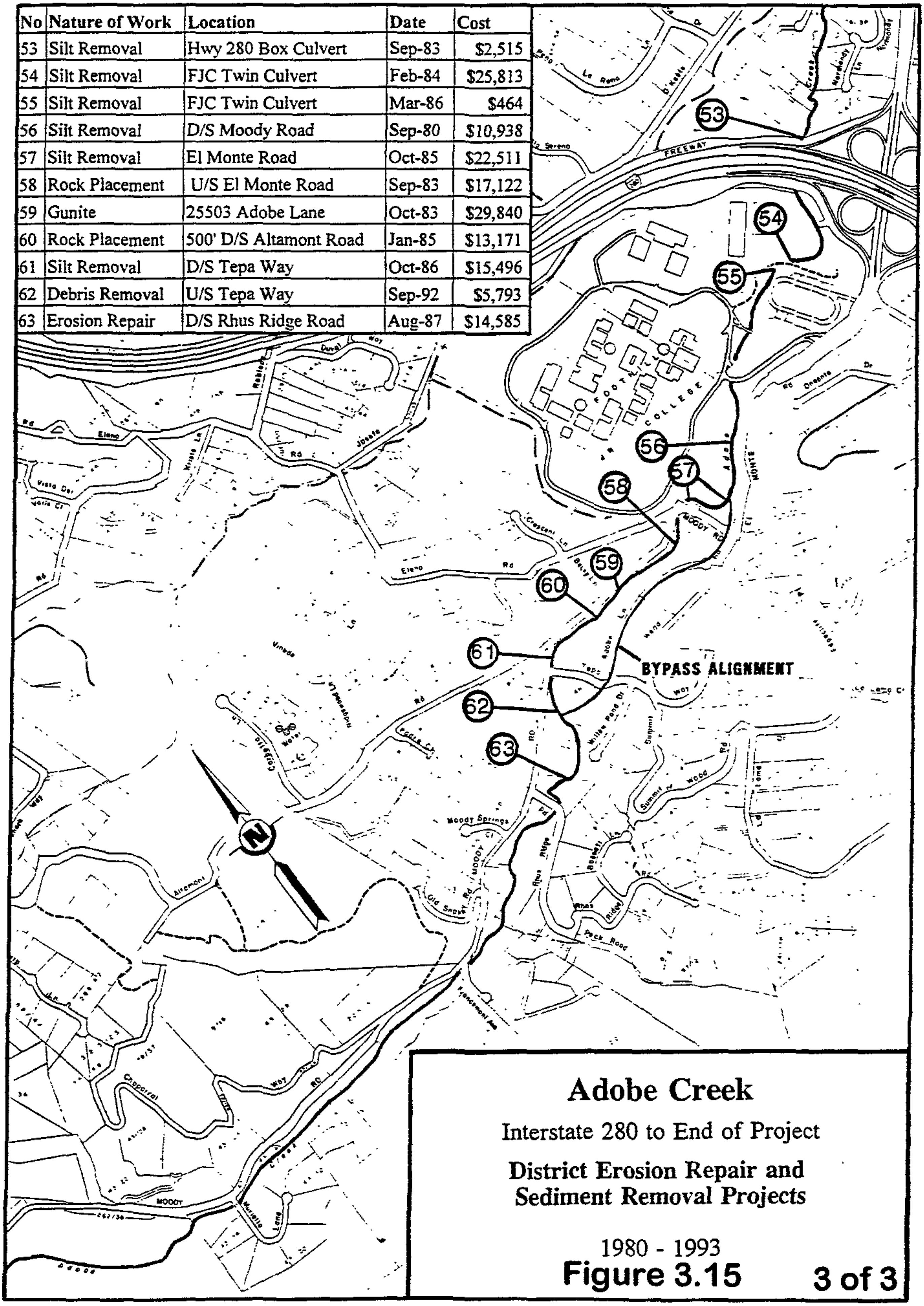
Foothill Expressway to Interstate 280

District Erosion Repair and Sediment Removal Projects

1980 - 1993

Figure 3.15 **2 of 3**

No	Nature of Work	Location	Date	Cost
53	Silt Removal	Hwy 280 Box Culvert	Sep-83	$2,515
54	Silt Removal	FJC Twin Culvert	Feb-84	$25,813
55	Silt Removal	FJC Twin Culvert	Mar-86	$464
56	Silt Removal	D/S Moody Road	Sep-80	$10,938
57	Silt Removal	El Monte Road	Oct-85	$22,511
58	Rock Placement	U/S El Monte Road	Sep-83	$17,122
59	Gunite	25503 Adobe Lane	Oct-83	$29,840
60	Rock Placement	500' D/S Altamont Road	Jan-85	$13,171
61	Silt Removal	D/S Tepa Way	Oct-86	$15,496
62	Debris Removal	U/S Tepa Way	Sep-92	$5,793
63	Erosion Repair	D/S Rhus Ridge Road	Aug-87	$14,585



Adobe Creek

Interstate 280 to End of Project

District Erosion Repair and Sediment Removal Projects

1980 - 1993

Figure 3.15 **3 of 3**

EROSION AND SEDIMENT PROBLEMS

Erosion occurs actively throughout the area. Figure 3.15 shows the cost, location, and type of work associated with individual maintenance jobs linked to erosion, and the sediment and debris it causes. Between 1980 and 1993, over $800,000 was spent on mitigating problems associated with erosion within the study area. Bank erosion is attributed to steep creek bottom gradients which cause high velocities and scouring at the toe of the creek banks. As the undercut side slopes of the channel become saturated, large sections of the banks slough into the channel introducing trees and various debris into the flow. Culverts and narrow portions of the channel will trap this debris, impeding flow and placing properties at risk. This type of erosion leaves private properties immediately adjacent to the creek at risk from bank failure. Photographs of erosion, sedimentation, and maintenance examples for Adobe Creek are shown in Figure 3.16.

The sedimentation problems along Adobe Creek are complicated by channel erosion. Debris is transported by the high-velocity flows and deposited in areas where the water slows down, reducing the channel capacity. The deposition occurs at almost all the culverts upstream of El Camino Real.

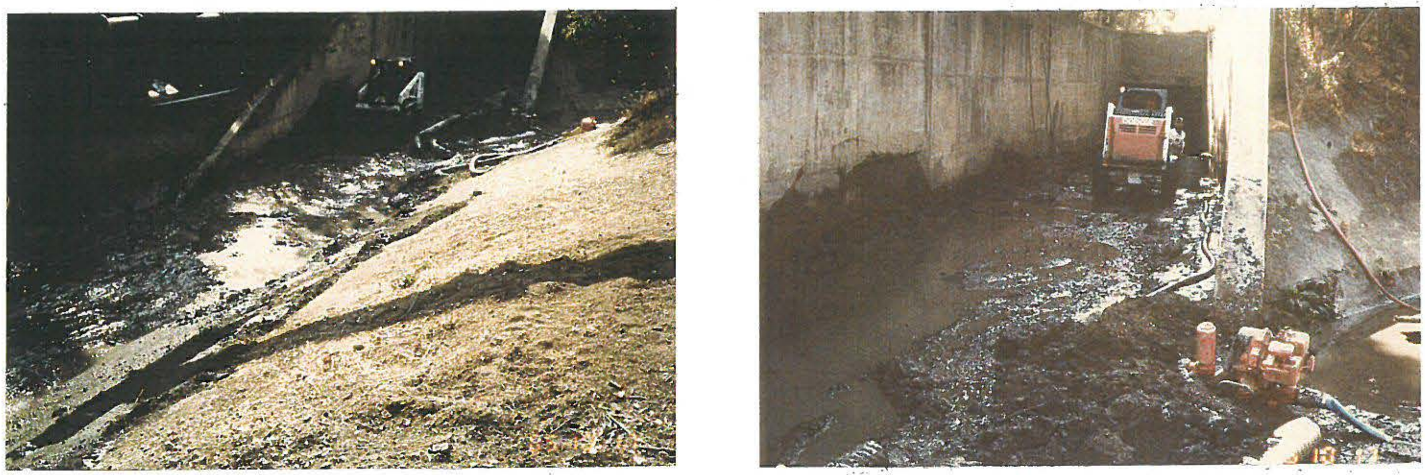
Erosion of the channel banks has denuded numerous areas along the creek of all vegetation. Severe erosion has been repaired primarily with sacked concrete and gunite which protect the eroded channel banks.

LOCAL DRAINAGE PROBLEMS

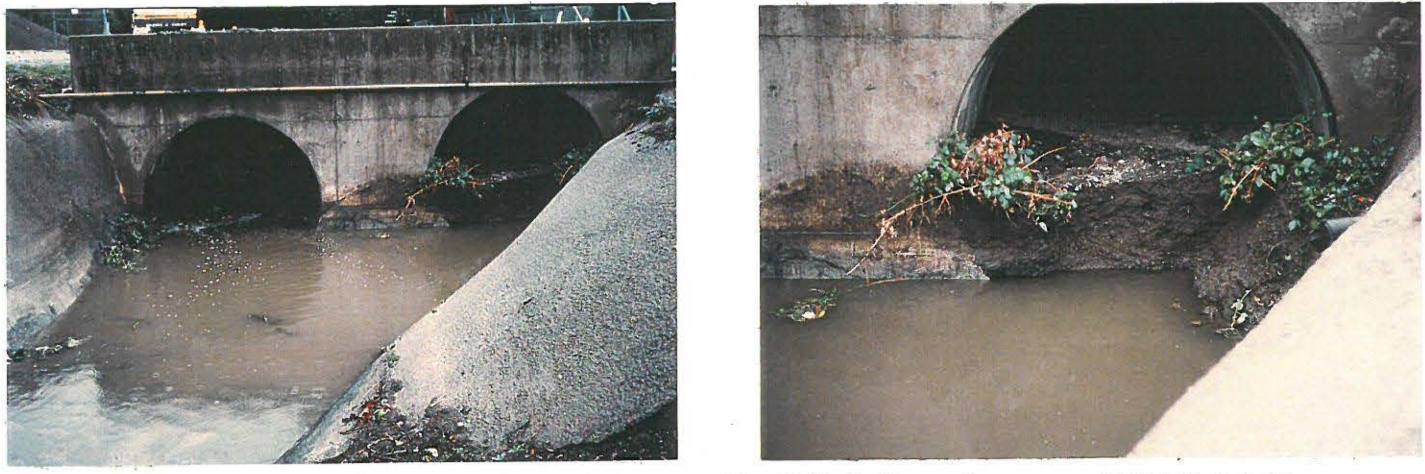
Local drainage is the system of gutters, storm drain inlets, storm sewers, and outfall structures that convey local surface runoff into Adobe Creek. The local drainage facilities are owned, operated, and maintained by the cities or property owners whose lands they drain.

Only a few of the local drainage outlets into Adobe Creek upstream of El Camino Real are installed with flapgates to prevent reverse flow. All the outlets are designed to discharge into the creek by gravity. When the water levels in the creek rise above the elevation of the drainage outlets, local runoff would be prevented from entering the creek channel. Water would accumulate in the streets until the flood flows from the storm had peaked and, if the outlet does not have a flapgate on it, reverse flow from the creek may occur.

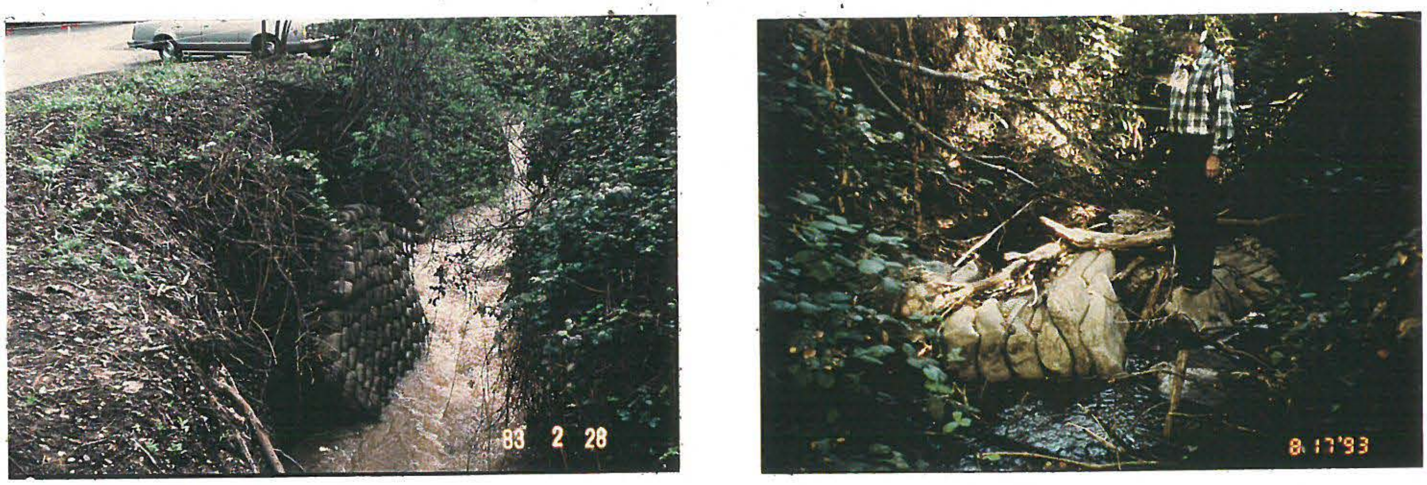
FIGURE 3.16
Erosion, Sedimentation, and Maintenance Examples for Adobe Creek



Sediment Removal at Exit of Bypass Culvert - Foothill College Campus (S1614-20 & 21)

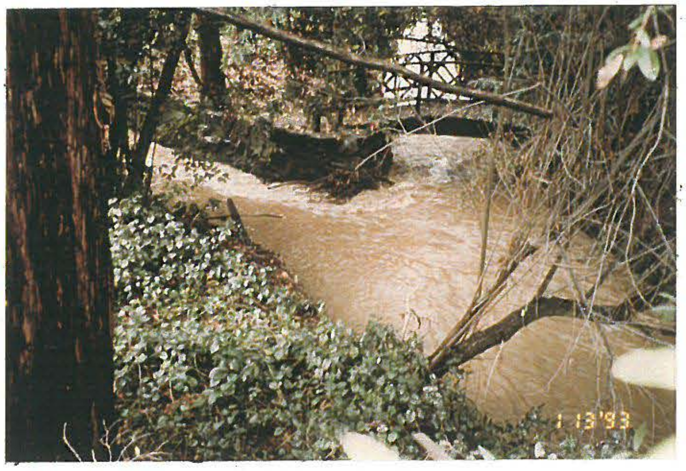


Sediment Buildup in Pipe Culverts - Foothill College Campus (S1359-6 & 7)

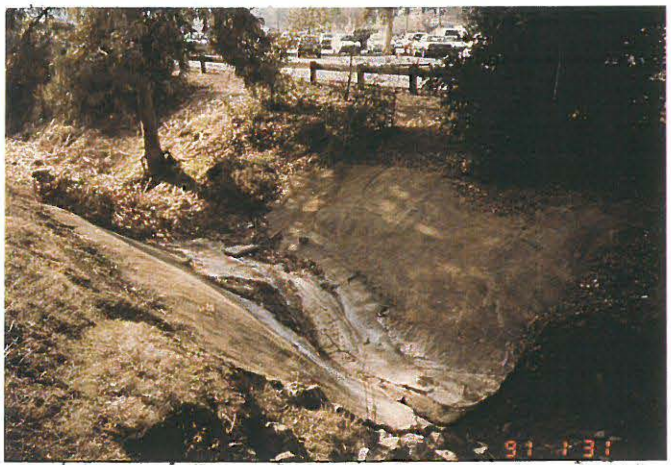


Failure of Sack Concrete Slope Protection - Downstream of O'Keefe Lane (S759-2 & S3641-3)

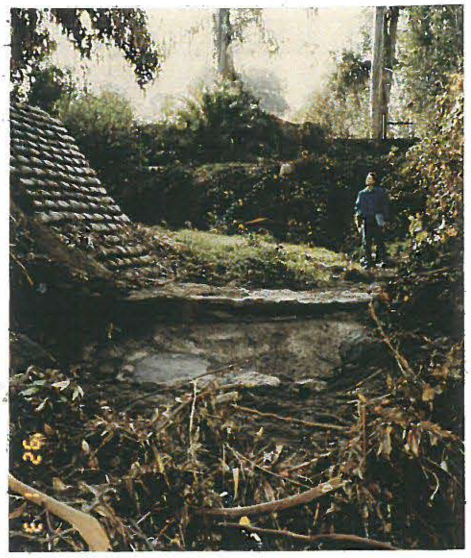
FIGURE 3.16
(continued)



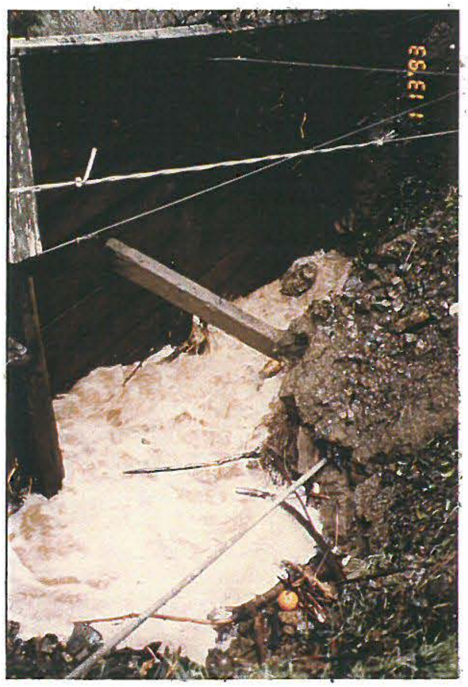
Island in Creek D/S Burke Road (S3529-41)



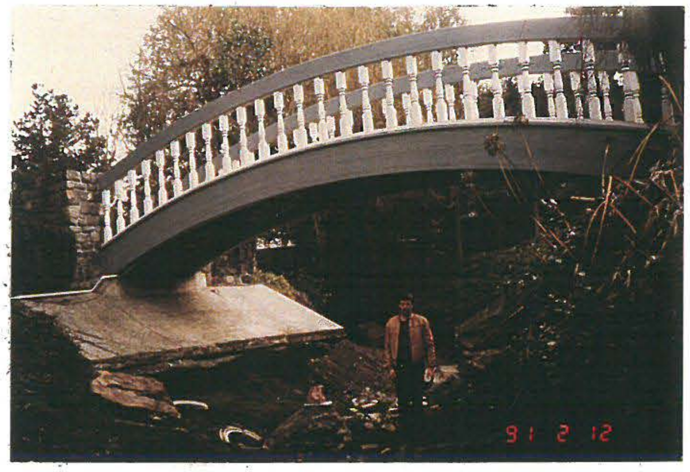
Eroding Drop Structure Foothill College (S3084-29)



Erosive Drop Structure D/S West Edith Avenue

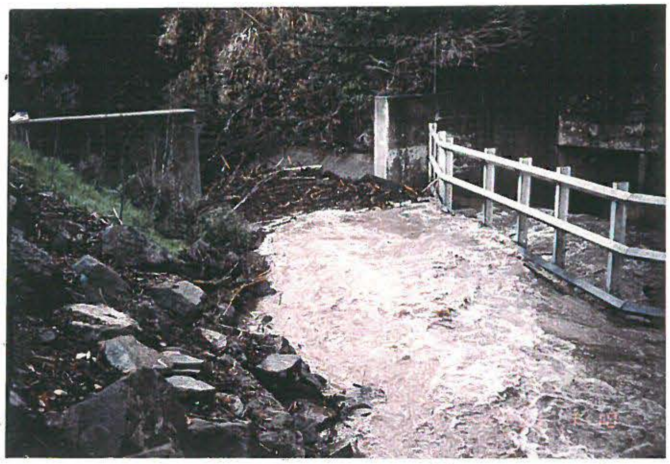


Bank Erosion Behind Wooden Retaining Walls - Downstream of West Edith Avenue January 1993 (S3529-18)
(Wall failed in 1995)
(Photograph on next page)

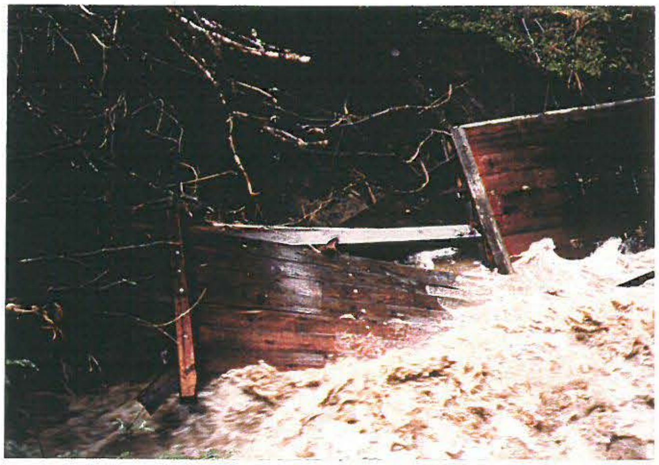


Eroding Footbridge Upstream El Monte Road (S3084-1)

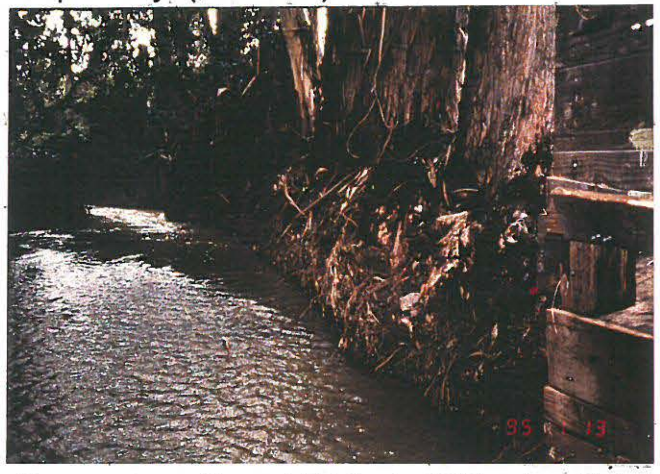
FIGURE 3.16
(continued)



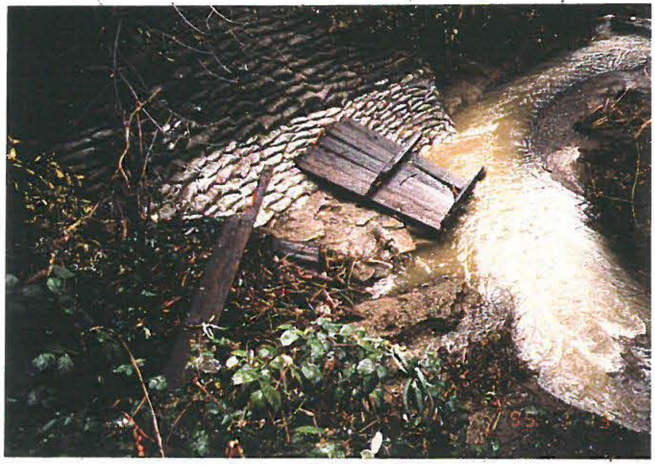
Debris at Bypass Entrance - Upstream of Tepa Way (S3884-7)



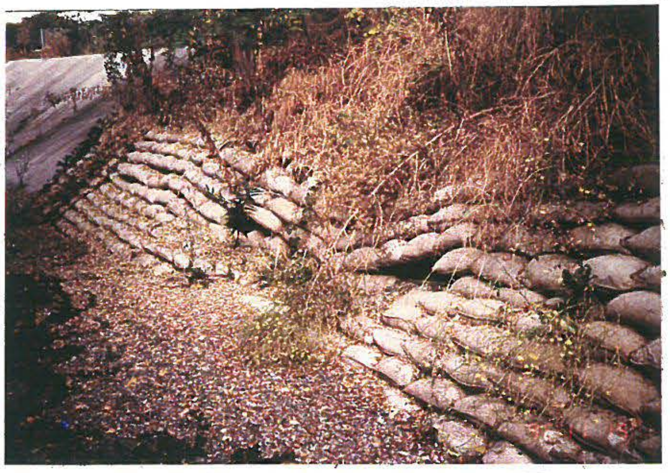
Failed Wooden Retaining Walls Downstream of West Edith Avenue (S3885-12)



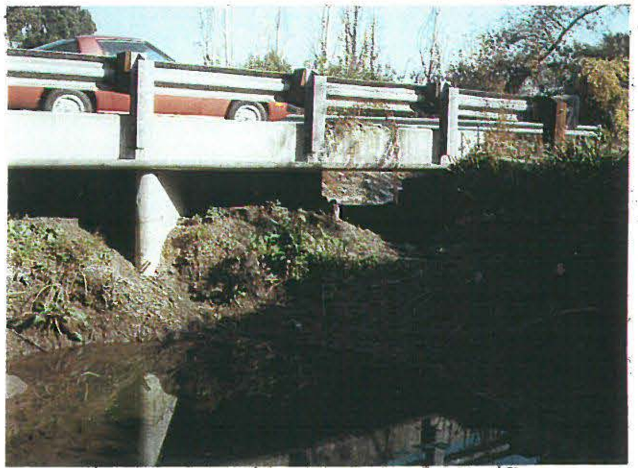
Former Location of 75 feet of Wooden Retaining Wall Downstream of Edith Avenue (S3893-8)



Piece of Failed Wooden Retaining Wall Downstream of West Edith Avenue (S3893-9)



Failed Sack Concrete Upstream of El Camino Real (S4084-25)



Sediment Buildup at El Monte Road Culvert (P55-19)

CHAPTER 4
INTEGRATED WATER RESOURCES MANAGEMENT PROGRAMS IN THE ADOBE CREEK WATERSHED

This chapter describes the various ongoing integrated water resources management and programs, both in the District and by others, in the Adobe Creek watershed.

SANTA CLARA VALLEY WATER DISTRICT

The District has different programs that have a goal of improving the water quality of south San Francisco Bay and the streams of the Santa Clara County (County). This includes the Adobe Creek watershed. Some of those programs are:

- Flood Damage Reduction Program
- Adopt-A-Creek Program
- Participation in the Santa Clara Valley Urban Runoff Pollution Prevention Program
- Groundwater Protection Programs
- Environmental Programs
- Environmental Compliance Programs
- Design Coordination Division Programs
- Water Supply Programs

Flood Damage Reduction Program

The District has a flood damage reduction program that systematically addresses flooding, erosion, sediment, maintenance and water quality issues in a multi-objective planning process. District channel modification projects undergo extensive planning and design before construction begins. Impacts of the projects on flows, fish and wildlife, vegetation, and homes and businesses within the watershed are all taken into account during the planning process. Public concerns are evaluated in a lengthy review process. The District also seeks to integrate other projects and programs in the watershed into the flood damage reduction projects.

Adopt-A-Creek Program

The District has a program that is similar to California Department of Transportation's Adopt-A-Highway program. With the Adopt-A-Creek Program, the District will issue permits to program partners who adopt a section of a creek to clean where the District has fee ownership. The program provides an opportunity for citizen participation in creek cleaning and an opportunity to improve the water quality in the Santa Clara Valley. In the Adobe Creek watershed, the section of the creek between Highway 101 and El Camino Real has been adopted.

Santa Clara Valley Urban Runoff Pollution Prevention Program

This Program is a multijurisdictional effort between the District, the Santa Clara Valley's 13 cities, and the County. The Program was established in response to two water quality regulations affecting the San Francisco Bay: the Federal Clean Water Act and the San Francisco Bay Basin Water Quality Control Plan.

The Program's long term goals can be grouped into two categories: (1) long term goals which are directly related to regulatory requirements, and (2) long term goals which are designed to protect resources and beneficial uses and are less directly related to regulatory requirements.

Long term goals which address regulatory requirements:

- Reduce Heavy Metal Loadings to and Toxicity in Santa Clara Valley Streams and the South Bay.
- Reduce Heavy Metal Loadings and Toxicity in Sediments.
- Develop Cost-Effective Solutions to Storm Water Pollution Problems.
- Engage the Community in the Protection of Aquatic Resources.

Long term goals to protect resources and beneficial uses:

- Protect Santa Clara Valley Watersheds and South Bay.
- Protect Drinking Water Sources of Supplies.
- Protect Aquatic and Natural Resources.
- Engage the Community in Protecting Santa Clara Valley Watersheds.

To comply with the various provisions of the Program's NPDES storm water permit and to address other Program's goals, the Program implements the following control measures:

- Public Information: The Public Information/Participation Program (PI/P) is designed to eliminate and control storm water pollution through educational means. The PI/P Element supports the Nonpoint Source Program by providing the mechanism by which information is conveyed to the various target audiences. These audiences generally include: residents, industry and commercial establishments, environmental and other interest groups, educational institutions, public agencies, and local governmental decision makers.

- Watershed Management Measures: The goal of Watershed Management Measures (WMM) is to facilitate the cost effective protection of the beneficial uses of Santa Clara Valley streams and the South bay. Secondary goals include: (1) specifically protecting surface and groundwater drinking water supplies through coordination with District projects and activities, (2) increasing community awareness and appreciation of the importance of watersheds and water resources, including creeks and the Bay, (3) engaging the community in watershed protection. WMM are a Program-wide activity which embraces other Program elements such as (1) New Development and Construction, (2) Public Information and Participation, and (3) Program Management.

The WMM activities also meet the requirements and the spirit of the San Francisco Estuary Project's Comprehensive Conservation and Management Plan, the Coastal Zone Act and

Reauthorization Amendments (CZARA), and the Regional Board's staff guidance on New Development Controls.

- Monitoring Program: The overall goal of monitoring is to obtain adequate information to characterize and define problems, and in turn implement and assess the effectiveness of management measures which are designed to provide reasonable protection of resources and beneficial uses. Key objectives of Program monitoring include comparing of storm water discharges with water quality objectives, identifying sources of pollutants and toxicity, evaluating effectiveness of control measures, and providing direction to the overall Program based upon an ongoing definition and characterization of problems.

- Metal Control Measures: The goal of the Program's Metals Control Measures (MET) is to reduce metals concentrations in Santa Clara Valley streams and loads to the South Bay for metals of environmental concern which substantially originate from urban sources or activities. MET activities generally fall into other Program elements such as Public Agency Activities or Industrial and Commercial Controls.

- Public Agency Activities: Control Measures under the Public Agency Activities (PAA) element have the goal of reducing or eliminating adverse water quality impacts due to construction, operation, and maintenance actions by municipalities of the Program. Successful implementation of PAA activities is particularly important since agencies in the Program should serve as good examples to the community.

- Illicit Connection and Illegal Dumping Identification and Elimination (ICID): Control measures under the ICID element have the goal of identifying and eliminating non-permissible non-storm water discharges associated with either illegal dumping or illicit connections between sanitary/process water lines and storm drains.

- Industrial and Commercial Discharges Control (IND): Control measures under the IND element are to control storm water discharges associated with industrial and commercial activities into municipal storm drain systems.

- New Development and Construction Activities: The goal of new development and construction activities control measures is to minimize the adverse effects on urban runoff from new and redevelopment both during and after construction. Activities contained within this element apply to private development and to public agency construction projects.

Groundwater Protection Programs

The District, along with the State Regional Water Quality Control Board (RWQCB), takes a leading role in prevention and cleanup of leaking underground tanks, industrial spills and other groundwater contaminants through a variety of ongoing programs.

- Fuel Leaks Cleanup: the District has been involved in overseeing the investigation and cleanup of fuel leak sites in the County since 1987.

- Solvent Leaks Cleanup: the District works closely with the RWQCB and other state and federal agencies to investigate and cleanup solvent leak sites. Throughout the years, solvent leaks have been affecting a few municipal water supply wells, resulting in closure and treatment of the water supply.

- Wellhead Standards and Protection: since 1984, the District has been working to identify and seal wells that may pose contamination problems. Abandoned or improperly constructed wells may act as pathways for contaminants to migrate into deeper aquifers which supply drinking water. From time to time, the District conducts public education and enforcement efforts to ensure proper well construction and destruction practices.

- Storm Water Infiltration Device Control: Storm water infiltration devices (SWIDs) are shallow storm water drainage wells (dry wells) that catch surface drainage water and percolate it into the ground. If constructed incorrectly, these wells can contribute to groundwater contamination. In August 1993, the District Board of Directors adopted a SWID Policy. This policy provides for a program to permit and register new and existing SWIDs, as well as evaluate risk and regulate destruction of those found to be harming or at the greatest risk of harming groundwater. The policy regulates devices deeper than 10 feet in the ground—which are at most risk for polluting groundwater—including dry wells, unlined drainage sumps, and detention ponds. Pursuant to the policy, new devices are subject to siting requirements and construction standards and are not allowed in high-risk areas such as industrial sites.

Environmental Programs

District staff prepare environmental documents, evaluate natural resources, and develop and implement mitigation programs. Great emphasis is focused on environmental protection, including the reestablishment and maintenance of streamside habitats. Some programs include:

- Vegetation Management Program: this program addresses all the measures and procedures used by maintenance crews to remove or control vegetation on District right of way. These measures consist of the application of herbicides and other chemical control agents, mechanical removal, hand labor removal and agricultural methods. An EIR is being prepared to assess the short-term, long-term, and cumulative impacts of this program on wildlife and fish habitat, surface water and groundwater quality, evaluate alternate means of accomplishing the goals of the program, and recommend mitigation to compensate for any adverse impacts.

- Erosion Control and Sediment Removal Routine Maintenance Program: this program addresses all measures and procedures used by the Maintenance Department to perform erosion control by various structural means and both in-stream and off-stream sediment removal. The purpose of this program is to develop a comprehensive approach to managing routine maintenance activities on District facilities. An EIR and related Corps permit applications are being prepared to comply with Section 404 of the Clean Water Act. The EIR and permit applications will: assess the short-term, long-term, and cumulative impacts of this program on wildlife and fish habitat; assess surface water and groundwater quality impacts; evaluate a broad range of alternatives in an equal level of detail; reduce the level of maintenance on any stream, up to a point where the stream can be self-maintaining; and define a formula for compensatory mitigation for impacts, a formula which identifies when onsite mitigation is appropriate, and when offsite mitigation within the watershed is appropriate.

- Multipurpose Constructed Wetlands Project: this is a potential cooperative project between the District, Nonpoint Source Pollution Program, and the City of San Jose. This project would address flood control mitigation, spill mitigation and the potential future regional wetland mitigation banking program. The findings of this project will also provide information for the Nonpoint Source Pollution Program on the storm water treatment demonstration project and also provide information to the San Jose wastewater treatment plant on effluent discharge reduction to the Bay during the dry season.

- Community Creekwatch (Streamkeeper) Program: this program is a community education and involvement program to train volunteers to conduct systematic resource inventories of the creeks within Santa Clara County. These inventories will identify critical creek areas for preservation, protection, and restoration. In addition, this program will enhance the public awareness of the creeks within the county, increase public participation in identifying creek pollution sources, and develop data for the environmental assessment of creeks. This program is funded by the District and administered by the Coyote Creek Riparian Station.

- Automated Environmental Mapping Program: this program involves the development of a computerized map system to locate and track areas of environmental concern in the creeks in Santa Clara County. The program includes the mapping of critical habitat areas, wetlands, sensitive species areas, and stream inventory data. This program will take data generated from the Streamkeeper Program (previously described) and place it into a computerized geographic information system. Delineation of pollution and critical habitat that will aid in developing baseline data on watershed characteristics. The mapping information will be available for graphical presentations for use in public awareness programs. This program is funded by the District and administered by the Coyote Creek Riparian Station.

Environmental Compliance Programs

The District's Environmental Compliance Division manages hazardous waste and ensures that the District complies with local, state, and federal regulations regarding the handling and storage of hazardous materials and hazardous waste disposal. The division also conducts hazardous materials preacquisition investigations and remediates hazardous materials problems for the District's capital improvement projects. The division actively responds to and investigates incidents of hazardous material spills and illegal dumping which occur on District property. This protects the public and the environment, including fish, wildlife, and streamside habitats. Some programs this division manages are:

- Alignment Investigations Program: this program identifies potentially contaminated sites within a District project area and delineates the extent of hazardous material contamination in the project alignment. Remedial activities are performed to minimize the impacts of, and the District's liabilities due to, hazardous materials encountered on District capital improvement projects.

- Property Acquisition Program: this program investigates and evaluates the impacts of hazardous materials on properties that will be acquired by the District in fee or easement in order to satisfy due diligent inquiry as presented in the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA).

- Emergency Response Program: this program was developed to protect the public, surface water, groundwater, and wildlife, from hazardous materials spills or illegal disposal on District property, easement or right of way.

- Facility Compliance Program: this program ensures that the District facilities and the District's hazardous material management complies with all local, state, and federal hazardous material regulations.

- Well Ordinance Program: this program ensures that the construction, maintenance, and destruction of wells in County complies with the District's Ordinance and state regulations through a system of permitting and inspection.

Design Coordination Programs

The District's Design Coordination Division oversees programs that regulate and protect the water resources of the County. The Division promotes public awareness and active participation in stream protection.

- District Ordinance 83-2: This is an ordinance adopted in 1983 to regulate and protect the water resources of the County. This ordinance prohibits the pollution of the water supplies of the District, whether in surface streams, reservoirs or conduits of any kind, or of groundwater. A District permit is required for: the installation of an outfall discharging into a watercourse under District jurisdiction, revegetation activities, and any construction or soil disturbances within 50 feet of any creek bank. Violators of the ordinance must correct the condition within a specified time. Examples of common violations are: encroachment, illicit connections, dumping, and erosion. In the Adobe Creek watershed 25 violations were reported in the year 1993. A summary of these violations is tabulated in Table 4.1. The District has acted directly on 11 of these violations. Action on the other 15 violations is being addressed by the Stream Care Guide which was mailed to all creekside residents in 1994. A copy of Ordinance 83-2 is included as Appendix J.

TABLE 4.1
Ordinance 83-2 Violations Reported and Acted on by District
During the Year 1993

	Type of Violations			
Reach	**Encroachments**	**Outfalls**	**Dumping**	**Erosion**
San Francisco Bay to Alma Street	0	0	0	0
Alma Street to Highway 280	8	9	6	1
Highway 280 to limit of jurisdiction	0	0	1	0

- Stream Care Guide: this brochure promotes public awareness and encourages active participation from every resident of Santa Clara County. The brochure addresses the preservation and enhancement of the streamside environment, protection of streams, and effective watershed management. The brochure is targeted at streamside property owners in helping to reduce the number of Ordinance 83-2 violations. This brochure is available from the Design Coordination Division.

Water Supply Program

As a water wholesaler and manager of water resources in the county, the District conserves, imports, treats, distributes, reclaims, and is responsible for the quality of water in the county. To meet its water supply objectives, the District constructed and now operates and maintains a countywide conservation and distribution system to convey raw water for recharge and treatment. None of the ten local water conservation reservoirs are within the Adobe Creek watershed.

The District owns and operates over 30 groundwater recharge facilities in six major recharge systems. These recharge facilities percolate local or imported water into the groundwater basin. None of these recharge systems are located within the Adobe Creek watershed.

CITY OF PALO ALTO

The City of Palo Alto is a participant in the Santa Clara Valley Urban Runoff Pollution Prevention Program and a co-permittee with 14 other agencies in Santa Clara County for the National Pollutant Discharge Elimination System (NPDES) permit issued by the Environmental Protection Agency (EPA) to the program in June of 1990.

As a participant in the Nonpoint Program (as previously described), the city is responsible for implementing program elements in their area of jurisdiction, and submitting an annual report to be included in the Santa Clara Valley NPDES annual report.

General Plan

The Palo Alto Planning Department is in the process of preparing a completely new Comprehensive Plan (General Plan), which will serve as the primary guidance document for future development and redevelopment in Palo Alto. The new plan, which is scheduled to be completed in late 1995, will have an increased focus on storm water quality issues and will specifically reinforce the goals of the Santa Clara Valley Nonpoint Source Pollution Control Program.

Palo Alto Municipal Code Provisions

The City of Palo Alto has sections of its municipal code pertaining to discharge of storm water into creeks. The sections of the municipal code that apply to Adobe Creek are listed below:

Prohibitions Against Storm Water Pollution—Section 16.09.106

"STORMDRAINS. It shall be unlawful to discharge any domestic waste or industrial waste into storm drains."

Erosion Control Provisions—Section 16.28.210(d)

"EROSION CONTROL. All exposed excavation slopes shall receive erosion control treatment."

Standard Drawings and Specifications—Section 3-3

"POLLUTION CONTROL. The contractor shall not, in connection with the work, discharge smoke, dust or contaminants into the atmosphere or discharge any undesirable fluids, slurries or other materials into any lake, river, stream, well, storm drain or channel that would have an adverse effect on the environment, as determined by the Engineer, or by law. The contractor shall incorporate BMP for storm water pollution prevention into all construction operations."

Policy for Storage of Equipment, Pipes, Structures and Granular Material in the Public Right of Way

"GRANULAR MATERIAL. No granular material shall be stored within 10 feet of any catch basin or curb return. Granular material shall not be allowed to enter the storm drain or sanitary sewer systems. A tarpaulin covering the granular material and sandbag berms placed around the granular material shall be used as required by the engineer during rainy periods."

Street Work Permit Requirements

"It is unlawful to discharge construction debris (soil, concrete, asphalt, sawcut slurry, paint, chemicals, etc.) or other waste materials into gutters or storm drains. The permittee/contractor shall incorporate BMP for storm water pollution prevention into all construction operations. . ."

CITY OF LOS ALTOS

The City of Los Altos is a participant in the Santa Clara Valley Urban Runoff Pollution Prevention Program and a co-permittee with 14 other agencies in Santa Clara County for the NPDES permit issued by EPA to the program in June of 1990.

As a participant in the Nonpoint Program (as previously described), the city is responsible for implementing program elements in their area of jurisdiction and submitting an annual report to be included in the Santa Clara Valley NPDES annual report.

The City of Los Altos has passed ordinances and amended their general plan to address problems of nonpoint source pollution and creek problems.

Los Altos Municipal Code Chapter 8—Stream Protection and Preservation

This code addresses:

- Protection of creeks from the detrimental effects of urbanization, disturbance of natural conditions, excessive storm water runoff, sedimentation, and erosion.
- Protection of wildlife habitat and trees within setbacks provided in this ordinance from destruction and adverse intrusion from the activities of persons for the public enjoyment of the natural riparian setting. Setbacks in this code vary from 40 to 80 feet depending on the lot size. The setback can extend to the limits of the one percent flood if the one percent limits exceed the required setbacks.
- Properties adjacent to creeks should be protected from flooding.
- A public pathway should be established along Adobe Creek between Shoup Park and O'Keefe Lane.

Los Altos General Plan Chapter 9—Natural Environment and Hazards

Flood Hazard Policies:

- Regulate land uses in flood-prone areas and only allow development in those areas only with appropriate mitigation.
- Identify and seek sources of funding to be used toward the prevention of flooding.
- Discourage concrete lining of creeks and encourage the District to use environmentally sensitive solutions to control local erosion problems.

Flood Hazard Programs:

- Annually review areas identified as being flood prone.
- Encourage the District to regularly maintain creek banks, to clear drainage channels of sediment and debris, and to minimize disruption to riparian habitat in an environmentally sensitive manner.
- Analyze bridge structures for constrictions that cause sedimentation or erosion.
- Enforce measures to reduce soil erosion and volume and velocity of surface runoff from construction sites and large parking lots or other impermeable surfaces.
- Work with other jurisdictions to ensure that development along creeks will not cause erosion which will affect Los Altos.

Resolution 93-36—Amending Los Altos General Plan Chapter 9—Natural Environment and Hazards

This resolution addresses surface water runoff and endorses the actions of the Santa Clara Valley Nonpoint Source Pollution Control Program.

Surface Runoff Policies:

- The City shall seek to ensure that surface water discharges into the storm water system comply with the NPDES permit and the receiving water limitations assigned by the RWQCB.
- The City shall establish nonpoint source pollution control measures and programs to attempt to reduce and control the discharge of pollutants into the City's storm drains and local creeks

Surface Runoff Programs:

- Implement, where feasible, the Santa Clara Valley Nonpoint Source Pollution Control Program including the City's local storm water management program.

TOWN OF LOS ALTOS HILLS

The Town of Los Altos Hills is a participant in the Santa Clara Valley Urban Runoff Pollution Prevention Program and a co-permittee with 14 other agencies in Santa Clara County for the NPDES permit issued by EPA to the program in June of 1990.

As a participant in the Nonpoint Program (as previously described), the city is responsible for implementing program elements in their area of jurisdiction and submitting an annual report to be included in the Santa Clara Valley NPDES annual report.

The Town of Los Altos Hills is currently in the process of revising its General Plan. The Source Reduction and Recycling Element will contain revisions that address storm water issues.

In April 1994, Los Altos Hills passed Ordinance Number 370 regarding zoning and site development. In this Ordinance an amendment addressing creek protection was added to the Los Altos Hills Municipal Code. Specifically, Section 10-2.702(e) states:

> "CREEK PROTECTION. Structures shall be set back a minimum of twenty-five feet (25′) from the top of the bank of all creeks. Greater setbacks may be required along major creeks in the Town; however, lesser setbacks may be allowed where approved by the Planning Commission. Improvements required to all creeks shall be accomplished to appear natural and to maintain the natural meandering course of the existing creek. Creeks and banks shall be protected so as to remain in their natural state as much as possible. They should not be disturbed by the building or grading process. No grading shall be allowed in creeks or within the required setbacks from the top of bank. Safety concerns and preservation of riparian habitat are required to be simultaneously addressed when designing development and required improvements to creeks."

SANTA CLARA COUNTY

Santa Clara County is a participant in the Santa Clara Valley Urban Runoff Pollution Prevention Program and a co-permittee with 14 other agencies in the County for the NPDES permit issued by EPA to the program in June of 1990.

As a participant in the Nonpoint Program (as previously described), the County is responsible for implementing program elements in their area of jurisdiction and submitting an annual report to be included in the Santa Clara Valley NPDES annual report.

In addition to participation in the Nonpoint Source Program, the County has a General Plan (1990) that includes protective measures. These measures concern creeks and streamside areas in the county. Listed below are the pertinent measures from the Natural Environment, Land Use, and Public Safety Sections of the General Plan:

- Public projects shall be designed to avoid damage to stream environments.
- Where possible, riparian woodlands, marshes and floodplains which have been altered should be allowed to return to a natural state.
- In floodplains that are not already developed, land uses shall be restricted to avoid the need for major flood control alterations to the streams.
- Public projects should preserve the stream environment and should provide multiple use for such purposes as parks, open space preserves, trails and flood control.

STATE REGULATIONS

Streambed Alteration Agreements: California Fish and Game Code Section 1601/1603

Any person, governmental agency, state or local, and public utility proposing a project which will divert, obstruct or change the natural flow or bed, channel, or bank of any river, stream or lake must give notice to the CDFG under Sections 1601 (public) and 1603 (private) of the California Fish and Game Code.

California State Water Resources Control Board

The California State Water Resources Control Board (SWRCB) is responsible for the quality of the water in the state waterways. The nine RWQCBs that implement the policies of the SWRCB, make policy recommendations, and issue permits to improve water quality. The San Francisco Regional Board has issued three general NPDES permits which are applicable in the Adobe Creek watershed.

NPDES General Industrial Activity Storm Water Permit

This permit applies to storm water discharges by certain regulated industries. Industries are required to implement a storm water pollution prevention plan containing best management practices to reduce pollutants in storm water to the maximum extent practicable.

NPDES General Construction Activity Storm Water Permit

This permit is required of all construction projects disturbing five or more acres of land area. BMPs to control pollution in storm water runoff both during and after construction are required.

NPDES Municipal Storm Water Permit

Municipalities with populations over 100,000, or those that have been determined to be significant contributors of pollutants to an impaired water body, are required to obtain NPDES municipal storm water permits. The applicants are required to collect existing information regarding storm water discharges and receiving water quality, develop storm water management programs, provide adequate fiscal resources, prepare a storm water management program, and implement BMPs to control pollutants to storm water to the maximum extent practicable. The Adobe Creek watershed falls within the jurisdiction of the NPDES permit issued to the Santa Clara Valley Urban Runoff Pollution Prevention Program.

FEDERAL REGULATIONS

The Rivers and Harbors Act

The Rivers and Harbors Act was enacted by Congress in 1889 to protect interstate commerce in navigable waters through the regulation of streams and rivers. Sections 9 and 10 of the Act relate to protecting navigable water. Section 9 of the Rivers and Harbors act requires an applicant to obtain a permit to construct a dike or dam in navigable waters of the United States. Under Section 10, the Corps regulates projects or construction of structures in or over any navigable water of the United States, and the excavating from or depositing of material in such waters. Adobe Creek is not a navigable water body.

Fish and Wildlife Coordination Act

The Fish and Wildlife Act was established to protect the quality of the aquatic environment as it affects the conservation, improvement, and enjoyment of fish and wildlife resources.

The Fish and Wildlife Coordination Act requires that any federal agency that proposes to control or modify any body of water must first consult with the USFWS and the National Marine Fisheries Service (NMFS).

Endangered Species Act (Section 7)

The federal Endangered Species Act requires federal agencies, in consultation with the NMFS and the USFWS, ensure that their actions do not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of these species.

The State Endangered Species Act requires agencies to consult formally with CDFG when the proposed action may affect state-listed endangered or threatened species.

Clean Water Act

The Clean Water Act was enacted by Congress in 1972 and its goal was to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To meet this objective, Section 301 of the Clean Water Act prohibits the discharge of any pollutants into navigable waters, except what is allowed by permits issued under Sections 402 and 404.

Sections 401, 402, and 404 of the Clean Water Act

Section 401 addresses effluent standards and water quality standards by requiring, in addition to a dredge and fill discharge permit, water quality certification from the SWRCB.

Section 402 authorizes the EPA to issue permits under procedures established to implement the NPDES program.

Section 404 authorizes the Corps to issue permits for and regulate the discharge of "dredge or fill materials into waters of the United States." Waters of the United States include:

- All waters which are currently used, or which were used in the past for commerce, including waters which are subject to the tide;
- All interstate waters, including lakes, rivers, streams, intermittent streams, sloughs, and natural ponds;
- All impoundments of water;
- Tributaries of waters; and
- Wetlands adjacent to waters.

Once an area has been identified as a federal water and a permit is applied for, an environmental assessment is required under the National Environmental Policy Act (NEPA). The NMFS and USFWS review and comment on all Section 404 permit applications. In addition, the RWQCB is responsible for certifying Section 404 permits as being in compliance with state water quality standards.

Coastal Zone Act Reauthorization Amendments of 1990

The Coastal Zone Management Act was originally passed by Congress in 1972 to voluntarily develop comprehensive programs to protect and manage coastal resources. To receive Federal approval and implementation funding, States had to demonstrate that they had programs, including enforceable policies, that were sufficiently comprehensive and specific both to regulate land uses, water uses, and coastal development and to resolve conflicts between competing uses. In 1990 Congress enacted the CZARA of 1990. These amendments were intended to address several concerns, one of which is the impact of nonpoint source pollution on coastal water quality.

CZARA guidance specifies two management measures for channel modifications:

- Management Measure for Physical and Chemical Characteristics of Surface Waters
  - Evaluate the potential effects of proposed channel modifications on the physical and chemical characteristics of surface waters in costal areas;
  - Plan and design channel modifications to reduce undesirable impacts; and
  - Develop an operation and maintenance program for existing modified channels that includes identification and implementation of opportunities to improve physical and chemical characteristics of surface waters in those channels.
- In-stream and Riparian Habitat Restoration Management Measure
  - Evaluate the potential effects of proposed channel modifications on in-stream and riparian habitat in coastal areas;
  - Plan and design channel modifications to reduce undesirable impacts; and
  - Develop an operation and maintenance program with specific timetables for existing modified channels that includes identification of opportunities to restore in-stream and riparian habitat in those channels.

National Historic Preservation Act (Section 106)

The National Historic Preservation Act provides the Advisory Council on Historic Preservation power to review and comment on Corps permit applications that could have an effect on historic properties listed in the National Register of Historic Places or those properties eligible for listing.

CHAPTER 5
FLOOD PROTECTION PROJECT ELEMENTS

This chapter describes the flood protection elements of the Adobe Creek Watershed Planning Study. It includes the alternative formulation criteria and limitations, alternatives considered, and the alternatives selected as the proposed project.

STUDY AREA

The reach of Adobe Creek from El Camino Real to upstream of Moody Road, a distance of approximately 7½ miles is the upper portion of Adobe Creek. The lower portion of the creek was improved to the one percent level of protection starting in the 1950s. The upper reach is the last portion of the creek that, in some places, lacks the capacity to safely convey the one percent design flow.

The project area consists of 16 subareas called reaches, one of which is further divided into a subreach (see Table 5.1). The location of these reaches on the creek is shown on the study area map, Figure 5.1.

TABLE 5.1
Adobe Creek Study Reaches

Reach	Subreach	Description
1		El Camino Real to Hetch Hetchy pipeline
2		Hetch Hetchy pipeline to upstream Alta Mesa Cemetery
3		Upstream Alta Mesa Cemetery to Yerba Buena Avenue
4		Yerba Buena Avenue to Foothill Expressway
5		Foothill Expressway to West Edith Avenue
6		West Edith Avenue to Burke Road
7		Burke Road to Manresa Way
8		Manresa Way to O'Keefe Lane
9		O'Keefe Lane to Interstate 280
10		Interstate 280 to Foothill College entrance
11	A	Foothill College entrance to bypass confluence structure
11	B	Bypass confluence structure to El Monte Road
12		El Monte Road to Tepa Way
13		Tepa Way to Rhus Ridge Road
14		Rhus Ridge Road to Francemont Avenue
15		Francemont Avenue to Murietta Lane
16		Murietta Lane to upstream Moody Road

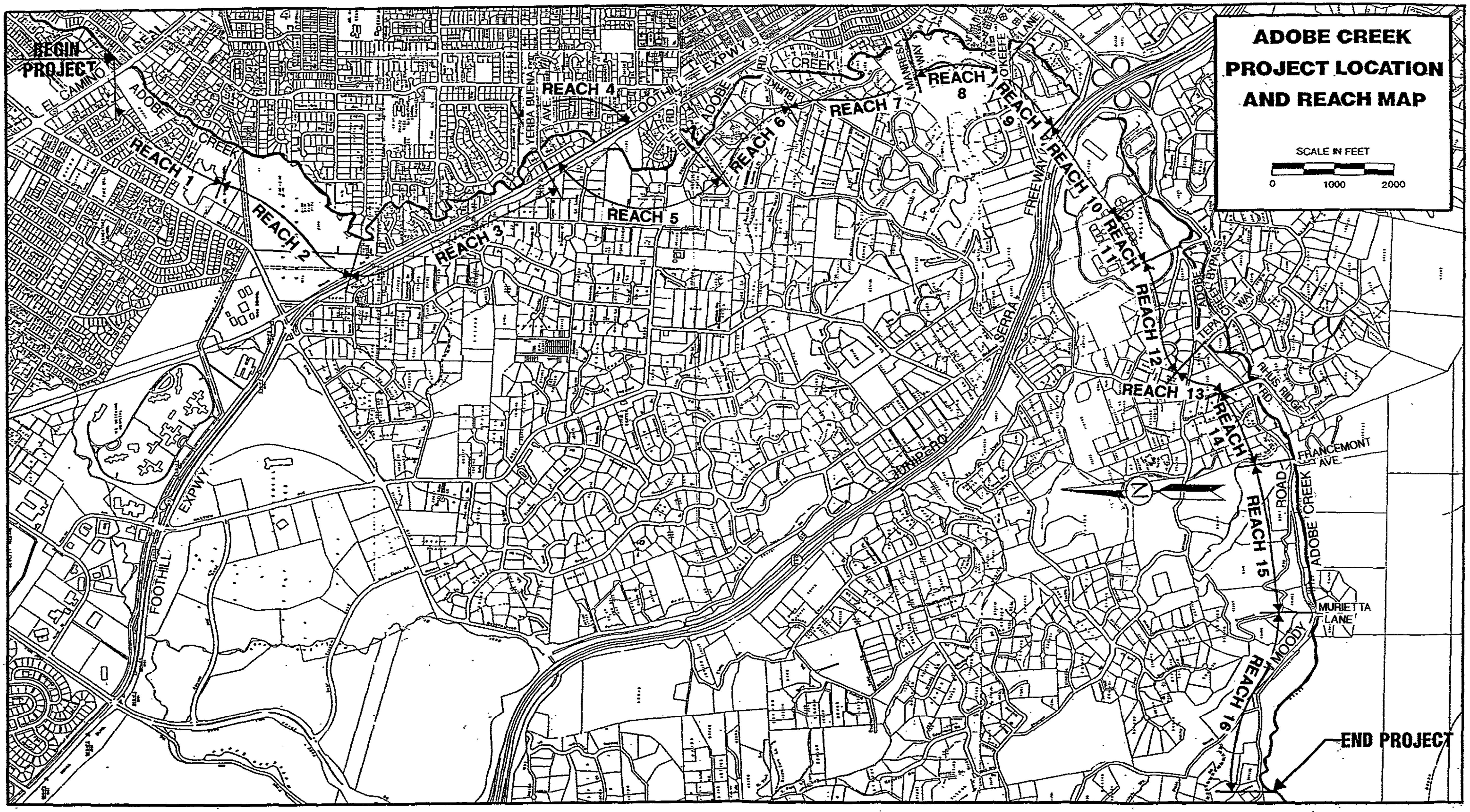

ADOBE CREEK
PROJECT LOCATION
AND REACH MAP
SCALE IN FEET
0
1000
2000
BEGIN PROJECT
END PROJECT
REACH 1
REACH 2
REACH 3
REACH 4
REACH 5
REACH 6
REACH 7
REACH 8
REACH 9
REACH 10
REACH 11
REACH 12
REACH 13
REACH 14
REACH 15
REACH 16
EL CAMINO REAL
ADOBE CREEK
FOOTHILL EXPWY
YERBA BUENA AVE.
ADOBE CREEK
BURKE RD.
MANRESA WAY
OKEEFE LANE
FREEWAY
SERRA
JUNIPERO
ADOBE CREEK BYPASS
TEPA WAY
RHUS RIDGE RD.
FRANCEMONT AVE.
ADOBE CREEK
MOODY ROAD
MURIETTA LANE
FOOTHILL EXPWY
N

Figure 5.1

FORMULATION OF ALTERNATIVES

When formulating a project, the District attempts to define solutions which require the minimum amount necessary to solve the problem. For example, reduce the flood hazard with a minimum environmental impact and cost. The final plan selection is always a balance between sometimes conflicting objectives. For example, a *reasonable* increase in cost may be acceptable, if a plan has significantly less adverse impacts and strong public support.

Potential solutions range from the low cost, low impact, *Do Nothing* plan, to the extreme concrete-lined channel which is usually much more costly and environmentally destructive. The feasibility of each of the various practicable alternative solutions is constrained by many factors, but by far the most significant is the amount of land available adjacent to the creek.

Alternatives on Adobe Creek were formulated, where feasible, to solve flooding and erosion/sedimentation problems, provide adequate access for future maintenance activities, reduce future maintenance costs, correct or control sources of pollutants, and to restore functions and values of the historic riparian corridor and stream geomorphology.

This section describes the engineering criteria used, the alternatives studied, and the project selection process.

Engineering Criteria

The preliminary design for all the alternatives considered complies with District policy and is based on generally accepted engineering criteria for channel modification projects.

Design Flow Rate

The policy of the District is that the modified channel must be capable of conveying the 1 percent (100-year) flood with freeboard. The design flow rates used for this project were obtained from the District's Hydrology Study, dated April 1989. The District's policies and methods are discussed in Appendix H. The hydrology study is included as Appendix I. The 100-year level of protection is consistent with the policy of FEMA. FEMA is responsible for the administration of the NFIP (see Appendix E). FEMA prepares the Flood Insurance Rate Maps which are the basis for determining flood insurance requirements and rates.

Table 5.2 shows the design flow rates in cfs for the 1 percent, 10 percent, 43 percent, and 67 percent floods in the study area. The 10 percent (10-year) flood flow is commonly used in conjunction with local storm drain design, the 43 percent (2.3 years) is used for ordinary high water calculations, and the 67 percent (1.5 year) is used for bankfull or channel forming discharge calculations.

TABLE 5.2
Adobe Creek Design Flow Rates

Location	**Annual Probability of Exceedance (Frequency)**			
	1% (100-Year)	**10% (10-Year)**	**43% (2.3-Year)**	**67% (1.5-Year)**
At El Camino Real	2,900	1,600	710	420
At Foothill Expressway	2,700	1,400	570	320
At Purissima Creek Confluence	2,000	1,100	490	290
At U/S of Bypass Channel Confluence	1,100[1]	1,100	490	290
At Bypass Channel Entrance	2,000	1,100	490	290
At Francemont Avenue	1,800	900	330	190

[1] 900 cfs in bypass channel

Channel Roughness

Another parameter used in the design of flood control channels is the channel roughness factor (Manning's n). Typical values used are shown in Table 5.3.

TABLE 5.3
Adobe Creek Design Channel Roughness Factors

Channel Description	**High "n" For Stage**	**Low "n" For Velocity**
Existing natural channel	.065	.042
Existing overbank	.080	.048
Sacked concrete slope protection	.030	.025
Gunite slope protection	.025	.022
Wood retaining walls	.025	.022
Step gabion slope protection, natural invert	.040	.035
Concrete lining	.015	.013
Step gabion slope protection, rock invert	.045	.035
Articulated concrete block	.025	.020
Rock riprap	.045	.035
Revegetation areas	.070	.050

Velocity

Maximum non-erosive velocity for an earth channel could range up to about 6 feet per second. Velocities for Adobe Creek exceed the allowable range for earth channels throughout the study area.

For gabions, maximum velocities range up to about 10 feet per second for bank lining and up to 15 feet per second when the channel invert is also lined.

Concrete-lined channels are stable for flow velocities over 15 feet per second.

Freeboard

The third design parameter is freeboard. The following are the District Guidelines used in this study to establish minimum freeboard:

1. **Existing Bridges**: Pressure flow is acceptable; however, the bridge must be able to withstand all lateral and uplift forces.

2. **New Bridges**: Freeboard should be equivalent to at least that in the channel upstream and downstream.

3. **Channels Without Levees (Water Level Below Natural Ground)**: Minimum freeboard is 1-foot or 2/10ths the total energy (depth of flow +[$V^2/2g$]), whichever is greater.

4. **Channels with Earth Levees or Floodwalls**: Minimum freeboard is 4 feet. If 2/10ths the total energy is greater than the 4-foot freeboard requirements, the computed value shall be used for freeboard.

Starting Water Surface

The starting water surface elevation is 54.2 feet National Geodetic Vertical Datum (NGVD) based upon the 1 percent water surface for the concrete channel immediately downstream of El Camino Real from the 1985 Adobe Creek Engineer's Report.

Maintenance Access

The District's design guidelines are to provide maintenance access roads of 18 feet wide where possible. The minimum allowable width is 15 feet. Maintenance access ramps must be at least 12 feet wide with a maximum slope of 20 percent for a concrete-lined ramp and 13 percent for aggregate-base ramps. In situations where the ramp could be used as a public trail, the ramp slope would be 5 percent to conform to the Americans With Disabilities Act.

ALTERNATIVES FEASIBILITY AND THEIR SIGNIFICANT IMPACTS

Several options were considered to solve the problems on Adobe Creek within the study area. In general, different sets of solutions were considered for each of the 16 reaches. Some of the study reaches were combined for analysis because they had similar channel types and problems. Those solutions which were not feasible for a specific reach or group of reaches of Adobe Creek were eliminated from further consideration. For example, there are areas where physical constraints limit consideration of earth channels or modified floodplains. In addition, placing the channel underground in buried conduits can be prohibitively expensive, or impossible to construct and maintain. Alternatives that were investigated, but found to be not practicable, are discussed at the beginning of each reach based section.

"No Project" Alternative

Under this alternative, the District would not take any direct action to reduce the existing flood hazard on Adobe Creek. Residents within the floodplain would continue to face potential flooding problems. Bank failure and debris blockage of existing, inadequate culverts would continue to threaten those living along the creek banks. During a 1 percent flood, damages as high as $2.7 million would occur. Over 190 residential, 5 multi-unit dwellings, and 26 businesses would be inundated by floodwaters from Adobe Creek.

On the average, some flooding could be expected to occur about once every 3 years. Average annual flood damages would be about $110,300. The District would continue its ongoing maintenance program of debris and sediment removal, invasive vegetation control, and erosion repair. Annual maintenance costs currently average about $62,000 per year. These costs are likely to rise as disposal costs increase at landfills and regulatory agencies add mitigation requirements.

Throughout the entire study reach, continuing maintenance of the creek would be required. This is due to the close proximity of homes and the ongoing erosion problems which would continually require erosion protection. This continuing maintenance would decrease the quantity of natural creek banks throughout the study reach.

Downstream of West Edith Avenue, the wooden and concrete walls that line the creek would continue to collapse, leaving the channel banks unprotected. As the walls fail, trees would be exposed to erosive velocities and, if not protected, would be undermined and collapse into the creek. This could cause the blockage of downstream culverts and/or further erosion of the bank. Starting in the winter of 1995 through the winter of 1998, hundreds of feet of homeowner constructed wooden retaining walls adjoining the creek failed and collapsed into the creek. Sections of this wall were found as far as 2,000 feet downstream. In addition, this wall failure has left the creekbank exposed to erosive creek flows. Some properties in this reach (Reach 5), where the District has a maintenance easement, have been protected with gunite. This is considered only a short-term form of bank protection.

Since Foothill Community College was constructed in the early 1960s, the District has removed large amounts of sediment and vegetation from the creek on the college property. In areas where the creek is not accumulating sediment, erosion is a problem. Without a project, many sections of the creek channel on the college property will need major rehabilitation to avoid a catastrophic failure. This rehabilitation would include replacement of many large gunite-lined drops and riprap replacement in the vicinity of the drops. Therefore, the cost to rehabilitate the channel ($1,074,000) has been added to the "No Project" Alternative.

To mitigate the financial burden of flooding, owners of existing structures in the floodplain designated by FEMA have the option of purchasing federally-subsidized flood insurance[1]. Flood insurance is **required** when purchasing, with federally-backed funds, property which is located in the flood hazard areas designated by FEMA. Although structures and contents can be insured, *there are significant costs associated with flooding which are not covered by flood insurance.* These include the cost of emergency operations and indirect flood damages such as loss of business and damage to various public facilities. If flood insurance was purchased by all property owners in the flood hazard area, the premiums would amount to approximately $225,380 per year.

---

[1] Mandatory participation in the program is required if the owner has a federally insured loan, Public Law 93-234, the "Flood Protection Action of 1973."

If this is the selected plan, the FEMA 100-year floodplains would be redrawn to conform to the floodplains calculated for this study. These floodplains are greater in size than the postproject floodplains shown on the plan and profile plates at the end of this report.

The cost of the "No Project" alternative is $6.79 million[2]. This is the sum of the present worth of average annual flood damages, average annual flood emergency costs, annual erosion repair costs, development costs which will be incurred without the project, and annual flood insurance administration and policy costs. The average annual cost of the "No Project" alternative is $555,400. The alternative is summarized in Table 5.4.

TABLE 5.4
No Project Alternative Summary

Alternative	Description	Flooding	Erosion/ Sediment	Maintenance Program Issues	Adverse Impacts	Remarks	Total Cost ($1,000)
No project	No structural measures taken to reduce flooding. No change in existing flood hazard.	1% flood damages $2,700,000.	Bank failures threatening property will continue. Tree and property loss due to bank failure will continue.	Existing maintenance program would continue. >$62,000 annual maintenance.	No structural impacts, no decrease in flood insurance costs. Does not solve flooding problems, continued tree and property loss.	Does not solve problem. FEMA flood insurance continues.	First cost 6,794[1] Total annual cost 555.4

[1] Sum of the present worth of average annual flood damages, flood emergency costs, flood insurance administration and policy costs, maintenance costs, erosion repair at Foothill College, and development cost savings.

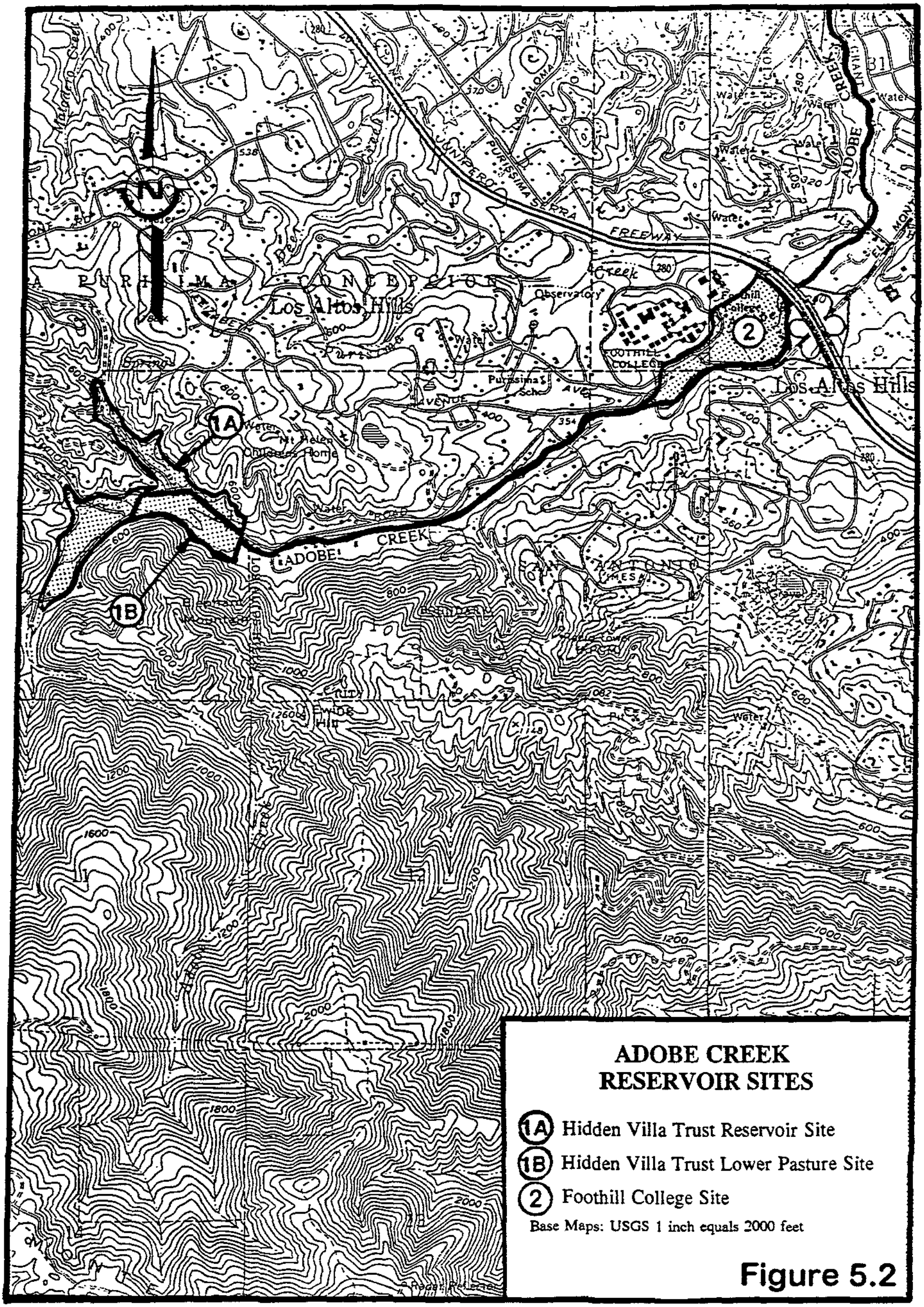
Upstream Reservoirs Alternatives

Construction of upstream reservoirs was studied By the District in a June 1985 Engineer's Report (ER) and again in a 1989 EIR for a project on Adobe Creek downstream of the study area. Four reservoir sites were studied for their adequacy, availability, constructability, and cost to acquire and maintain. The results of the analysis are summarized below:

1. **Hidden Villa Trust (Duvenek Ranch).** This site is located just above Murietta Lane on Moody Road and is shown on Figure 5.2. At this site, two options were evaluated for the storage of water. The two options evaluated were a 90-foot high dam upstream of Murietta Lane, and offstream storage in the lower pasture on the left side of Moody Road just upstream of Murietta Lane.

---

[2] First cost is calculated using an 8 percent discount rate over a 50-year period.



ADOBE CREEK RESERVOIR SITES

- (1A) Hidden Villa Trust Reservoir Site
- (1B) Hidden Villa Trust Lower Pasture Site
- (2) Foothill College Site

Base Maps: USGS 1 inch equals 2000 feet

Figure 5.2

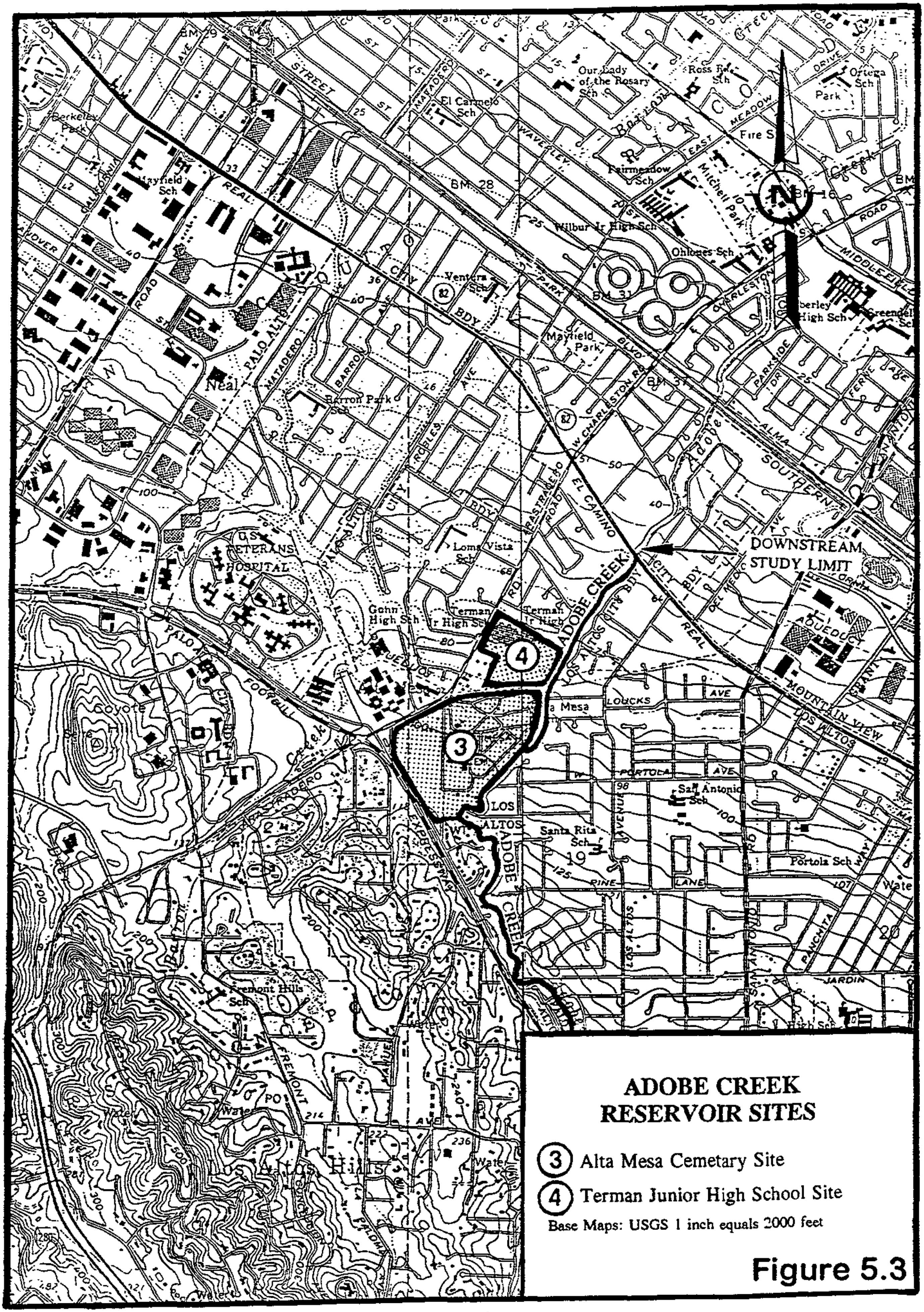
The first option would form a reservoir that would cover an area of 70 acres and have a storage volume of 2,424 acre-feet. It would require relocation of 3,000 feet of Moody Road, 1,000 feet of Moody Court, and any utilities associated with them. All homes in the reservoir area would need to be relocated (approximately seven). Noise, dust, and air pollution would be a result of construction of the dam, as well as blasting for the dam's foundation. A long-term impact of the reservoir would be the substantial loss of vegetation, wildlife habitat, and open space. The 1989 estimated cost of this option was approximately $35,000,000.

The second option would involve excavating the Hidden Villa Trust lower pasture that is bounded by Murietta Lane, Moody Road, the Hidden Villa Trust entrance road, and Adobe Creek. The site is approximately 10 acres and would require 7 feet of excavation for storage of water during high-flow events. This site could store 70 acre-feet of water taken from the peak of the flow during the 1 percent design event. With this site in use, the peak flow would be reduced by only 5.7 percent (88 cfs) at Foothill College; 3 percent (84 cfs) at West Edith Avenue, and 2.9 percent (86 cfs) at El Camino Real. The reductions in flow from this option would not lower the peak flow to a point that would allow any substantial decrease in any proposed channel modifications or culvert replacements. In addition, while technically feasible to construct, the site would cost approximately $10,000,000 (1989 estimate), not including the cost of the excavation and inflow structure. There would also be environmental impacts due to the loss of vegetation and wildlife habitat from the excavation and construction of the side weir for inflows from Adobe Creek.

2. **Foothill Community College**. This site is located on the grounds of the Foothill Community College (the site location is shown on Figure 5.2) and would consist of 450,000 cubic yards of excavation and construction of concrete retaining walls. This would result in the complete removal and relocation of the football field, baseball field, athletic track, and the eastern parking lots. This site is 44 acres and could store approximately 840 acre-feet of water. Since no alternative sites are available for the lost facilities, construction and operation of this site would have major impacts on the operation of Foothill College. In addition, there would be environmental impacts due to the loss of vegetation and wildlife habitat.

3. **Alta Mesa Cemetery**. This site is bounded by Arastadero Road, Foothill Expressway, and Adobe Creek. The site location is shown on Figure 5.3. The site is 70 acres and would require 440,000 cubic yards of excavation, relocation of the existing cemetery burial sites, and removal of 2,500 feet of riparian habitat along Adobe Creek. The relocation of the existing cemetery burial sites would result in significant unavoidable environmental and social impacts. In addition, the removal of the riparian vegetation for construction of the inflow spillway would result in impacts to vegetation and wildlife.

4. **Terman Junior High School**. This site is located on Arastadero Road, immediately downstream of Alta Mesa Cemetery, adjacent to Adobe Creek and is shown on Figure 5.3. This site is 21.7 acres and would require excavation of 440,000 cubic yards, removal of the old school buildings, a 6-foot floodwall on the lower sides of the reservoir, and removal of 500 feet of riparian habitat along Adobe Creek. The junior high is currently used by the City of Palo Alto as a library, community center, low income housing, and a park. Loss of this use would result in local service, housing, and recreational impacts. In addition, the removal of the riparian vegetation for construction of the inflow spillway would result in impacts to vegetation and wildlife.



ADOBE CREEK RESERVOIR SITES

③ Alta Mesa Cemetary Site

④ Terman Junior High School Site

Base Maps: USGS 1 inch equals 2000 feet

Figure 5.3

In conclusion, all of the four storage alternatives discussed would have significant environmental and social impacts and are considered not practicable.

Nonstructural Plan

A nonstructural alternative would minimize flood damages to structures in the floodplain without channel modifications. The existing structures in the floodplain would be floodproofed by raising them or by floodwall construction. The estimated cost of this alternative would be $ 22.2 million.

The costs associated with floodproofing include such basic elements as: fill, columns, floodwalls, flood shields, and closures. Secondary cost elements include: extension of access and utilities, lost space to homeowners, insulation and finishing walls and floors, subfloor drainage, backflow prevention, pumps, a reliable and accurate flood warning system, manpower training, and various other costs.

Negative factors associated with this alternative include the cost, continued street flooding once every three years, and the social impacts of disrupting families and homes. A major issue with floodproofing is that it requires intense community participation for success. Floodproofing heavily depends on residents to be present, knowledgeable, and alert during each flood emergency. Other issues such as streambank erosion requiring maintenance repair, continued water quality and environmental degradation, and removal of barriers to fish migration would not be addressed by this alternative. In addition, the floodplain would not be removed from FEMA 100-year floodplain maps. For these reasons and the high cost, this alternative is not considered feasible or practicable.

ALTERNATIVE SOLUTIONS BY REACH

The following presents descriptions of reach specific alternatives investigated and their impacts. The alternatives were evaluated considering project objectives, engineering requirements, existing constraints, effectiveness, impacts, cost, and future maintenance requirements. The alternatives are summarized in tables in each section and the selected alternatives are summarized in Table 5.14 (located at the end of this chapter).

El Camino Real to Upstream Alta Mesa Cemetery (Reaches 1-2)

1. Replace El Camino Real Culvert

This alternative consists of replacing the existing inadequate El Camino Real culvert with of a 20-foot by 12-foot box culvert. The inadequacy of the existing culvert is due to a combination of an old constrictive concrete arch culvert and widening done by Caltrans in the 1960s. The new culvert will be better aligned to the natural creek, a larger uniform section, and designed for the one-percent event. The existing upstream concrete transition structure would be replaced with a gabion-lined transition that has an articulated concrete block (ACB) channel bottom. This transition would include "fish passable" concrete drop structures at the upstream and downstream faces of the new culvert and a low-flow fish channel with baffles through the culvert. In addition, the existing earthen maintenance ramp upstream of the culvert on the left side would be resurfaced with ACB.

The culvert replacement will be a cooperative project with the City of Palo Alto to implement their "Palo Alto Gateway" conceptual plan. This will affect the architectural treatment of the culvert headwalls and the selection of revegetation plantings in the vicinity of the culvert. This plan is illustrated in Figure 5.4.

Construction of this alternative would eliminate existing 1 percent flood flows over El Camino Real and through the Cabaña Hotel property.

Traffic disruption would be a temporary short-term impact due to this alternative.

A typical section for this alternative is shown on Figure 5.5.

The cost of this alternative is $1,796,000.

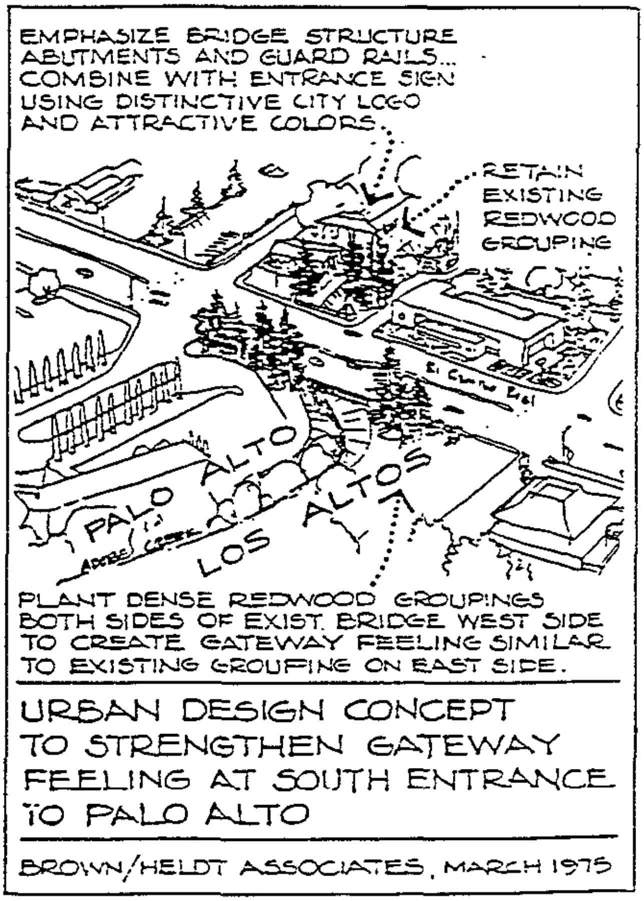

EMPHASIZE BRIDGE STRUCTURE ABUTMENTS AND GUARD RAILS... COMBINE WITH ENTRANCE SIGN USING DISTINCTIVE CITY LOGO AND ATTRACTIVE COLORS.
RETAIN EXISTING REDWOOD GROUPING
El Camino Real
PALO ALTO
LOS ALTOS
ADOBE CREEK
PLANT DENSE REDWOOD GROUPINGS BOTH SIDES OF EXIST. BRIDGE WEST SIDE TO CREATE GATEWAY FEELING SIMILAR TO EXISTING GROUPING ON EAST SIDE.
URBAN DESIGN CONCEPT TO STRENGTHEN GATEWAY FEELING AT SOUTH ENTRANCE TO PALO ALTO
BROWN/HELDT ASSOCIATES, MARCH 1975

FIGURE 5.4—Palo Alto Gateway Plan

2. *Floodwalls Upstream of El Camino Real*

For this alternative, a headwall would be constructed at the upstream face of the existing El Camino Real crossing and floodwalls would be constructed on the top of both banks. The floodwalls would extend for approximately 785 feet on the left bank and 875 feet on the right bank. The floodwall heights would average 6 feet on the left bank and 4 feet on the right bank; however, the floodwalls would be over 8 feet in some low bank areas. The existing culvert would be undisturbed but would be under pressure during high flows.

The existing earthen maintenance ramp located on the left bank, just upstream of El Camino Real, would be resurfaced with ACB. This would allow it to extend from El Camino Real over the floodwall and down to the creek bottom.

Impounding the water behind the floodwalls would cause the 60-inch storm drain upstream of El Camino Real to back up and cause adversely impact drainage flooding. Therefore, this alternative contains the cost to relocate the storm drain outfall to downstream of El Camino Real.

Construction of floodwalls would result in severe impacts to property owners. The floodwalls would encroach into many backyards, reducing the useable space of the affected properties. In addition, floodwalls of this height would cut off physical access and visual access to the creek. Finally, the use of floodwalls in a mostly natural area and the removal of many well-established trees would have adverse aesthetic impacts.

The construction of the floodwalls would be greatly hindered due to the difficult access to the top of bank on the left bank. This would result in an increased disturbance of residents and creekside habitat.

A typical section for this alternative is shown on Figure 5.5.

The cost of this alternative is $1,352,000.

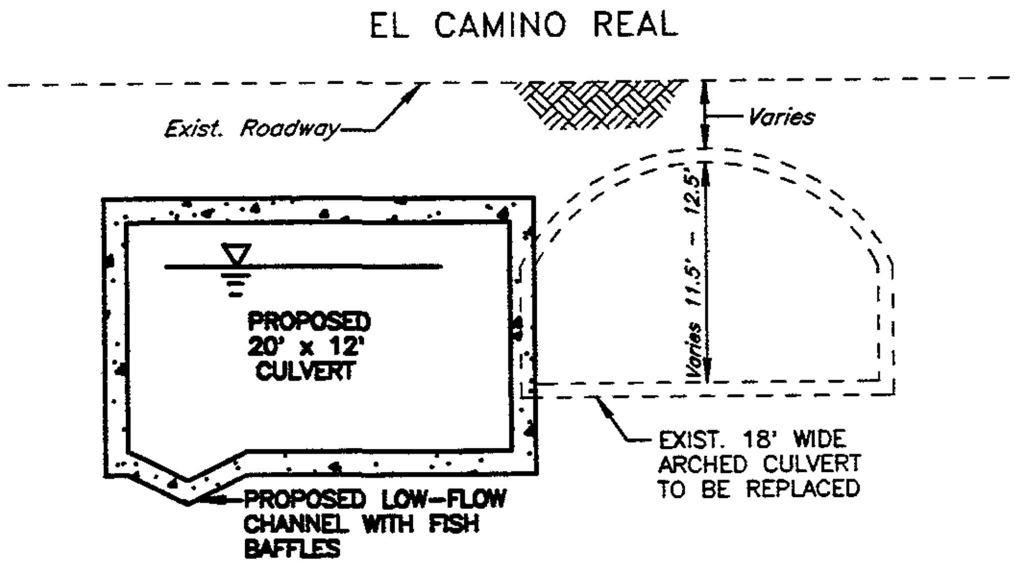
3. Maintenance Program and Access Ramps

This alternative consists of obtaining a continuous easement along both banks of the entire length of Reaches 1 and 2. Currently, the District has easements on 8 of the 49 properties bordering the creek in these reaches. This alternative establishes a program to acquire easements on the remainder of the properties. The real estate program is discussed in detail in Appendix G. In addition, new comprehensive maintenance guidelines would be established for vegetation and erosion control. A continuous easement, combined with new comprehensive maintenance guidelines, would allow the District to efficiently maintain the creek as a system. The new maintenance guidelines are discussed in detail in the Maintenance Program Chapter. A typical section for this alternative is shown as Figure 5.6. This alternative also includes a new maintenance access ramp at the Alta Mesa Cemetery property.

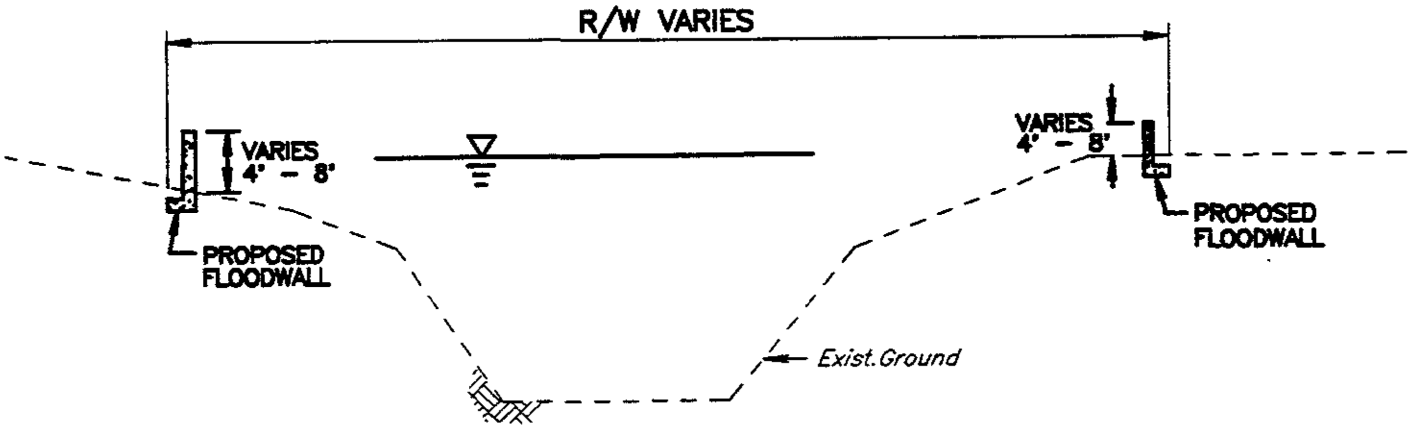
Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommends:

- Vegetation and debris such as concrete rubble should be removed from the creek channel to improve the channel capacity.
- In areas of creek bank erosion, the banks should be stabilized through the use of vegetation planting, placement of a wall at the toe of the slope and regrading the slope above the wall, or installation of a timber wall. What method is selected depends on the site-specific conditions, with vegetation only on very mild slopes and timber walls for very steep slopes.


EL CAMINO REAL
Exist. Roadway
Varies
Varies 11.5' - 12.5'
PROPOSED 20' x 12' CULVERT
EXIST. 18' WIDE ARCHED CULVERT TO BE REPLACED
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES

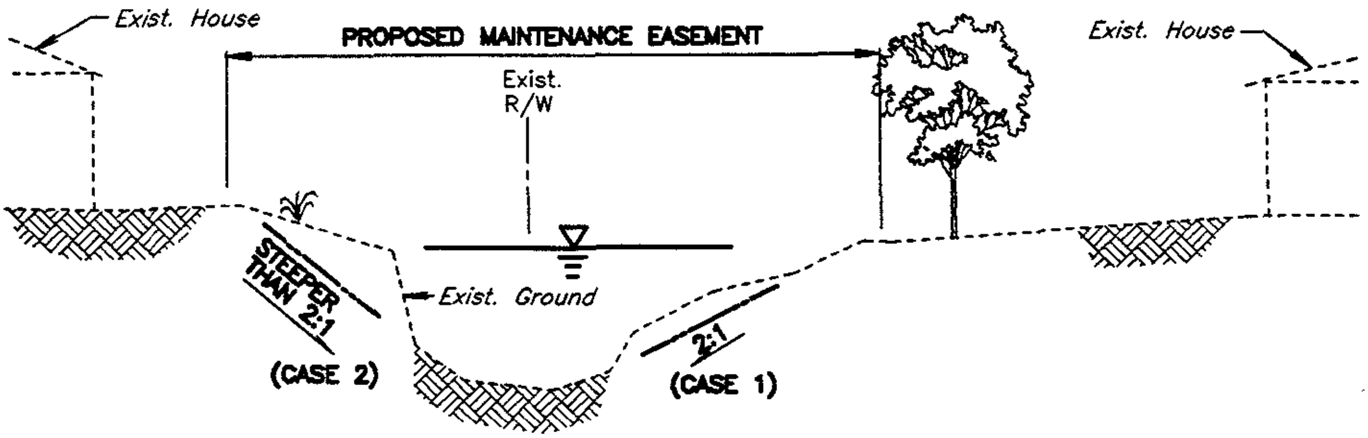
ALTERNATIVE #1
EL CAMINO REAL CULVERT REPLACEMENT



ALTERNATIVE #2
FLOODWALLS UPSTREAM OF EL CAMINO REAL

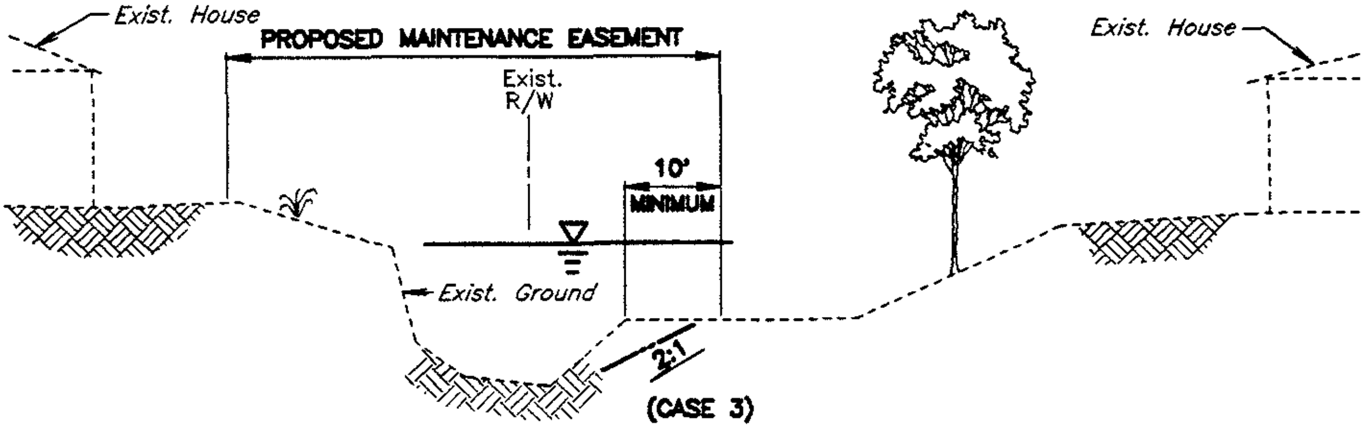
Figure 5.5

TYPICAL SECTIONS
REACH 1 FEASIBLE ALTERNATIVES
NTS



CASE 1: PROPOSED RIGHT-OF-WAY LINES WILL BE SET AT A SLOPE EQUAL TO TWO HORIZONTAL UNITS FOR EVERY ONE VERTICAL UNIT FROM THE TOE OF THE CREEK BANK.

CASE 2: FOR RESIDENTS WITH STRUCTURES CLOSE TO THE CREEK, PROPOSED RIGHT-OF-WAY WILL BE SET AT TOP OF EXISTING BANK.



CASE 3: PROPOSED RIGHT-OF-WAY LINES WILL BE SET AT A SLOPE EQUAL TO TWO HORIZONTAL UNITS FOR EVERY ONE VERTICAL UNIT FROM THE TOE OF THE CREEK BANK OR A MINIMUM OF 10 FEET FROM TOP OF LOW BANK.

MAINTENANCE EASEMENT CORRIDOR

Figure 5.6

TYPICAL SECTIONS

REACHES 1 TO 16 FEASIBLE ALTERNATIVES

NTS

TABLE 5.5
Summary of Feasible Alternatives—Reaches 1 and 2

EL CAMINO REAL TO UPSTREAM ALTA MESA CEMETERY—REACHES 1 and 2

#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	*Annual Costs* ($1,000)	*Total Cost* ($1,000)[1]
1[2]	El Camino Real culvert replacement	Replace existing culvert with a 20- by 12-foot box culvert. New upstream transition to culvert.		Reduced maintenance of upstream ramp.	Short-term traffic impact on El Camino Real. Vegetation impacts—0.08 acres.		Annualized First Cost 147 Maintenance Cost 12 Total Annual Cost 159	R/W 0 Const. 1,353 Mit. 105 Design 338 Total 1,796
2	Floodwalls	Floodwalls on top of bank for 785 to 875 feet upstream. Relocate 60 inch storm drain outfall to downstream El Camino Real.	Same as existing.	Same as existing.	Large loss of mature vegetation on top of bank in floodwall alignment. Large impact to adjacent property owners. Gravity drainage for local areas must be mitigated. Vegetation impacts —0.47 acres.	Greater environmental and social impacts than Alternative 1.	Annualized First Cost 110 Maint. Cost 12 Total Annual Cost 122	R/W 1 Const. 504 Mit. 721 Design 126 Total 1,352
3[2]	Maintenance program and access ramps	Identify a continuous maintenance corridor for long-term program. Proposed maintenance ramp from Alta Mesa Cemetery property.	Major erosion will be reduced by preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	District has 8 easements out of 49 properties within these reaches.		N/A

---

[1] "Design" includes design, geotech, and inspection.

[2] **Recommended plan.**

Upstream Alta Mesa Cemetery to Foothill Expressway (Reaches 3-4)

Three structural alternatives were initially investigated from Raquel Court to Foothill Expressway. These alternatives were:

a) Gabion Lining with ACB on the invert

b) Rectangular Concrete Lining

c) Floodwalls on the Top of the Banks

All of the alternatives would require large amounts of excavation, the removal of many well-established trees, and come extremely close to some of the homes along the creek. In addition, the floodwall alternative (C) would require floodwalls approximately 8 feet in height which would cut off physical and visual access to the creek.

Although these three alternatives are technically possible and would provide 1 percent flood protection, they were all found to be not practicable due to their impacts.

1. Replace Yerba Buena Avenue Bridge

This alternative consists of replacing the existing inadequate bridge at Yerba Buena Avenue with a double 12-foot by 10-foot box culvert. Under existing conditions, flooding is due to an inadequate culvert and an outbreak of flow upstream which flows down Blue Oak Lane and crosses over Yerba Buena Avenue. A new culvert at Yerba Buena Avenue would be capable of handling the one percent design flow, but would not solve the flooding due to the outbreak of flows downstream of Foothill Expressway.

A feature of this culvert design is that one of the two cells has a lower portion that is sized for the 1.5 year or bankfull flow (See Figure 5.7). The bankfull flow is defined as the channel forming or sediment carrying flow and is the highest flow expected during a "normal" year. Having this feature will allow the sediment transported during a normal flow year to be passed through the culvert and not accumulate. The culvert will also contain a low-flow fish channel with baffles.

A typical section for this alternative is shown on Figure 5.7.

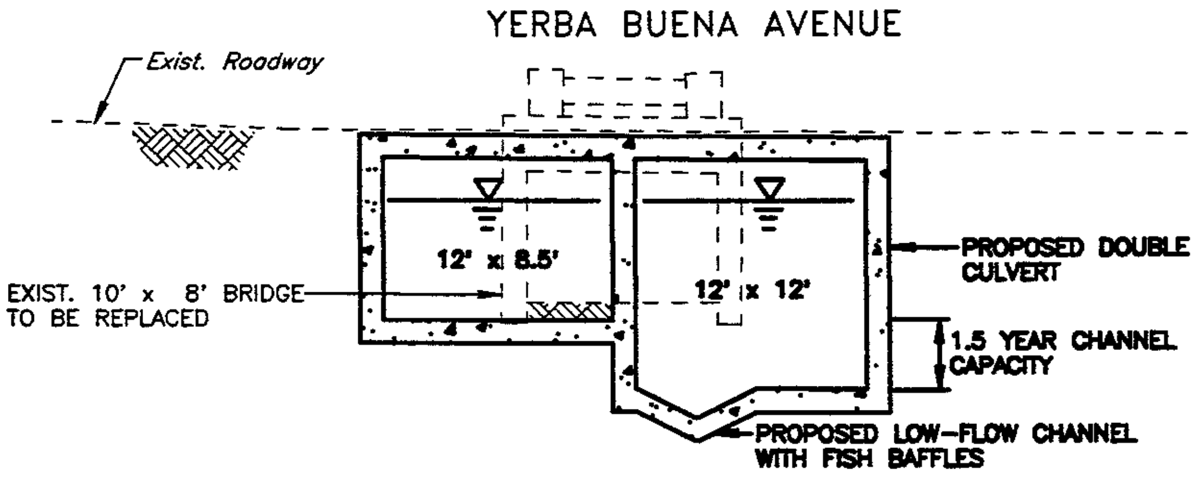
The cost of this alternative is $537,000.

2. Maintenance Program and Access Ramps

This alternative is similar to the one described for Reaches 1 and 2. In Reaches 3 and 4, the District has easements on 53 of the 82 properties that border the creek. In addition to establishing a continuous easement with new maintenance program guidelines, this alternative includes the rehabilitation of the existing maintenance ramp from District property downstream of Raquel Court.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommendations are the same as for Reaches 1 and 2.


YERBA BUENA AVENUE
Exist. Roadway
12' x 8.5'
12' x 12'
EXIST. 10' x 8' BRIDGE TO BE REPLACED
PROPOSED DOUBLE CULVERT
1.5 YEAR CHANNEL CAPACITY
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES

ALTERNATIVE #1

YERBA BUENA AVENUE BRIDGE REPLACEMENT

Figure 5.7

TYPICAL SECTIONS

REACH 4 FEASIBLE ALTERNATIVES

NTS

TABLE 5.6
Summary of Feasible Alternatives—Reaches 3 and 4

UPSTREAM OF ALTA MESA CEMETERY TO FOOTHILL EXPRESSWAY—REACHES 3 and 4

#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)[1]
1[2]	Yerba Buena bridge replacement	Replace existing inadequate bridge with a double 12- by 10-foot box culvert.	Lower velocity flows downstream of bridge causing less erosion.	Less maintenance downstream of new culvert.	Traffic impacts. Vegetation impacts—0.01acres.	Does not solve flooding problem in reach.	Annualized First Cost 44 Maintenance Cost 12 Total Annual Cost 56	R/W 0 Const. 424 Mit. 7 Design 106 Total 537
2[3]	Maintenance program and access ramps	Identify a continuous maintenance corridor for long-term program. Improve existing ramp downstream of Raquel Court.	Major erosion will be reduced by preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	District has 53 easements out of 82 properties within these reaches.	Annualized First Cost 0 Maintenance Cost 12 Total Annual Cost 12	N/A

[1] "Design" includes design, geotech, and inspection.

[2] Deferred bridge. Unspecified schedule. A 1% design is included in the plan for when the bridge needs to be replaced for other reasons.

[3] **Recommended plan.**

Foothill Expressway to West Edith Avenue (Reach 5)

1. Additional Culvert at Foothill Expressway

This alternative consists of adding a 12-foot by 12-foot box culvert next to the existing 12-foot by 10-foot box culvert beneath Foothill Expressway. The transition structures would be rebuilt to conform to the new culvert configuration.

The existing culvert is well below capacity and the addition of a culvert would provide protection up to the one percent event. The upstream water surface elevation would be lowered, eliminating seven homes on Old Oak Court from the 1 percent floodplain. The addition of the new culvert would also lower the velocity of water downstream of the culverts, decreasing erosion problems downstream.

A feature of this culvert design is that one of the two cells has a lower portion that is sized for the 1.5 year or bankfull flow (See Figure 5.8). The bankfull flow is defined as the channel forming or sediment carrying flow and is the highest flow expected during a "normal" year. Having this feature will allow the sediment transported during a normal flow year to be passed through the culvert and not accumulate. The culvert will also contain a low-flow fish channel with baffles.

Foothill Expressway is a major thoroughfare and the construction of this culvert would significantly disrupt traffic.

A typical section for this alternative is shown on Figure 5.8.

The cost of this alternative is $1,011,000.

2. Rock Lining Downstream West Edith Avenue

This alternative consists of an excavated rock riprap-lined channel with a 16-foot bottom width, 10-foot depth, and approximately 50-foot top width for 900 feet downstream of West Edith Avenue. Due to the required cutback and excavation for the channel construction, all trees on the right bank would be removed along with many redwood trees on the left bank. Large transition structures would be required from West Edith Avenue to the modified creek section.

This alternative does not require the purchase of additional right of way. Alternative requirements conform to existing right of way on the right bank and limits set by proposed development dedication on the left bank.

A typical section for this alternative is shown on Figure 5.8.

The cost of this alternative is $1,033,000.

3. Gabion Lining Downstream West Edith Avenue

This alternative consists of an excavated channel with a natural bottom and gabion-lined side slopes. The channel would be 9 feet deep and have a bottom width of 44 feet for 900 feet downstream of West Edith Avenue. The average top width of this channel would be approximately 56 feet. Due to the required cutback and excavation for the channel construction, all trees on the right bank would be removed along with many redwood trees on the left bank. Tree loss for this alternative would be approximately the same as Alternative 2. In addition, large transition structures would be required from West Edith Avenue and where the gabions transition back into the natural creek.

This alternative is similar to Alternative 2, in that it does not require purchase of additional right of way.

A typical section for this alternative is shown on Figure 5.9.

The cost of this alternative is $1,213,000.

4. Gabion/Articulated Concrete Block Lining Downstream West Edith Avenue

This alternative consists of an excavated gabion-lined channel with ACB blocks on the invert. The channel is 8 feet deep and has a bottom width of 27 feet for 900 feet downstream of West Edith Avenue. The average top width of this channel would be approximately 35 feet wide. Several drop structures would be required and a maintenance ramp would be built just downstream of West Edith Avenue on the west bank to allow access to the creek. An energy dissipation and transition structure would be constructed just downstream of the proposed gabion channel to prevent erosion from flows occurring when the high-velocity flows exit the gabion-lined channel. All eucalyptus trees on the right bank would be removed, with a few redwood trees on the left bank. This alternative would have a lower tree loss than Alternatives 2 or 3 because of the narrower channel top width.

This alternative is similar to Alternative 2, in that it does not require purchase of additional right of way.

A typical section for this alternative is shown on Figure 5.9.

The cost of this alternative is $1,381,000.

5. Rectangular Concrete Lining Downstream West Edith Avenue

This alternative consists of an excavated rectangular concrete channel. The channel would be 10 feet deep and 20 feet wide for 900 feet downstream of West Edith Avenue. Features that are part of this alternative are: texturizing and colorizing the concrete channel walls, and a combination wood and black vinyl-coated chain link fence at the top of the channel banks. Several drop structures would be required and a maintenance ramp would be built just downstream of West Edith Avenue on the right bank to allow access to the creek. A concrete energy dissipation and transition structure would be constructed just downstream of the proposed concrete channel to prevent erosion from flows occurring when the high-velocity flows exit the concrete-lined channel.

This is the narrowest of the alternatives and does not incur any tree loss on the left bank. This alternative minimizes the tree loss on the right bank. This alternative has the lowest projected tree loss of all the alternatives.

This alternative is similar to Alternative 2, in that it does not require purchase of additional right of way.

A typical section for this alternative is shown on Figure 5.10.

The cost of this alternative is $1,151,000.

6. Box Culvert Bypass Beneath Fremont Road

This alternative consists of a 1,025-foot long double 10-foot by 10-foot box culvert bypass channel. The bypass begins at a location in the park 370 feet upstream of West Edith Avenue, continues under Fremont Road and then across the Rogez property discharging back into the creek 780 feet downstream of West Edith Avenue. This alternative is designed to keep the low flows in the original creek channel; only the high creek flows would go into the bypass culvert.

Construction of the bypass would have a significant adverse impact on traffic and emergency access on Fremont Road during construction, and would be costly and time consuming because of confined working conditions. Large entrance and exit structures would be required, resulting in visual impacts. The entrance and exit structures could not be completely fenced in and could be a potential hazard. The construction of a bypass channel would not alleviate the existing erosion problems through the creek. This necessitates including erosion protection for the existing creek.

A typical section for this alternative is shown on Figure 5.11.

The cost of this alternative is $5,850,000.

7. Flood Bench/Armored Low-Flow Channel Downstream West Edith Avenue

This alternative consists of an excavated 10-foot wide gabion-lined low-flow channel along the current channel alignment, a 10-foot wide mid-bank bench 3 feet above the low-flow channel, and an excavated 48 to 64-foot wide high-flow bench for 700 feet downstream of West Edith Avenue. The bench requires an average excavation of 5 feet depth and has a total top width of 90 feet. The bench would be on the Town of Los Altos Hills side. For 200 feet downstream of the flood bench, the creek channel would consist of a 20-foot wide gabion-lined channel. In order to reduce the steep slope of this channel, five drop structures are included in this alternative. All five drop structures are designed to be "fish passable."

This alternative has a large tree loss on the right bank because of the excavation for the bench. However, construction of this alternative would not remove any substantial trees on the left bank (Los Altos side). Mitigation revegetation will consist of joint planting (defined in Appendix A) in the lower riprap, and planting on the mid-bank bench and at the top of the right bank in the first 6 feet of the high-flow bench. The remaining bench area is a clear space which is required for the functioning of the alternative. Some planting will be done at the top of the left bank. This planting will be to replace any trees on that bank that must be removed.

This alternative was proposed by the Town of Los Altos Hills as an alternative to narrower channel modifications (Alternatives 2 through 5). This alternative is dependent on the Town of Los Altos Hills obtaining a sufficient project right of way dedication at the time of property development. Because of the dedication requirement, right of way cost has not been included in the alternative cost.

A typical section for this alternative is shown on Figure 5.12.

The cost of this alternative is $1,606,000.

8. *Widened Earthen Channel Downstream West Edith Avenue*

The concept of this alternative is to restore the functions and values of the historic riparian corridor. In this reach the creek has been confined to a narrow-walled channel for over 40 years. This alternative would consist of a widened earthen channel to the right of its present alignment. The channel would be 140 feet wide, have a 20-foot bottom width low-flow channel, 2:1 side slopes planted with vegetation, and an 80-foot wide excavated bench on the right side, also planted with vegetation.

While this alternative restores the "natural" function of the creek, its width makes it unlikely to be selected since the developer of the property has recently (1998) started construction of houses on the property.

A typical section for this alternative is shown on Figure 5.12.

The cost of this alternative is $2,976,000.

9. *Flood Bypass/Armored Low-Flow Channel Downstream West Edith Avenue*

This alternative consists of an excavated 10-foot wide gabion-lined low-flow channel along the current channel alignment and an excavated 64-foot wide (narrow bypass) or natural 100-foot wide (wide bypass) flood flow bypass separated from the low-flow channel by a raised embankment. The narrow bypass requires an excavation of 4 feet and the wide bench requires no excavation. The narrow bypass has a total top width of 110 feet and the wide bypass has a total top width of 140 feet. Both bypasses are 700 feet long and are on the Town of Los Altos Hills side. Both bypasses would have 200 feet of 20-foot wide gabion-lined channel downstream of the bypass areas.

Both bypasses have a large tree loss on the right bank. The narrow bypass has a high tree loss because of the excavation required and the wide bypass for the large area that would need to be cleared for the flow area. However, the narrow bypass has less tree loss than the wide bypass. Both of the bypasses do not remove any substantial trees on the left bank. Mitigation revegetation will be placed on the low-flow channel banks, on the raised embankment, and on the edges of the flood bypass. The remaining bench area is a clear space which is required for the functioning of the alternative. This alternative has a higher tree loss than Alternative 8. Because both options of this alternative would most likely make the lot undevelopable, the cost of purchasing the entire property ($2 million) has been included in the cost estimates. As mentioned in the description of Alternative 8, since construction on the property has already commenced, this alternative is unlikely to be selected.

A typical section for this alternative is shown on Figure 5.13.

The costs of this alternative are $3,778,000 for the narrow bypass and $3,668,000 for the wide bypass.

10. Maintenance Program and Access Ramps

This alternative is similar to the one described for Reaches 1 and 2. In Reach 5, the District has easements on 18 of the 27 properties that border the creek. In addition to the basic elements of the previously described alternative, a maintenance ramp is proposed downstream of West Edith Avenue as part of any channel modification alternative.

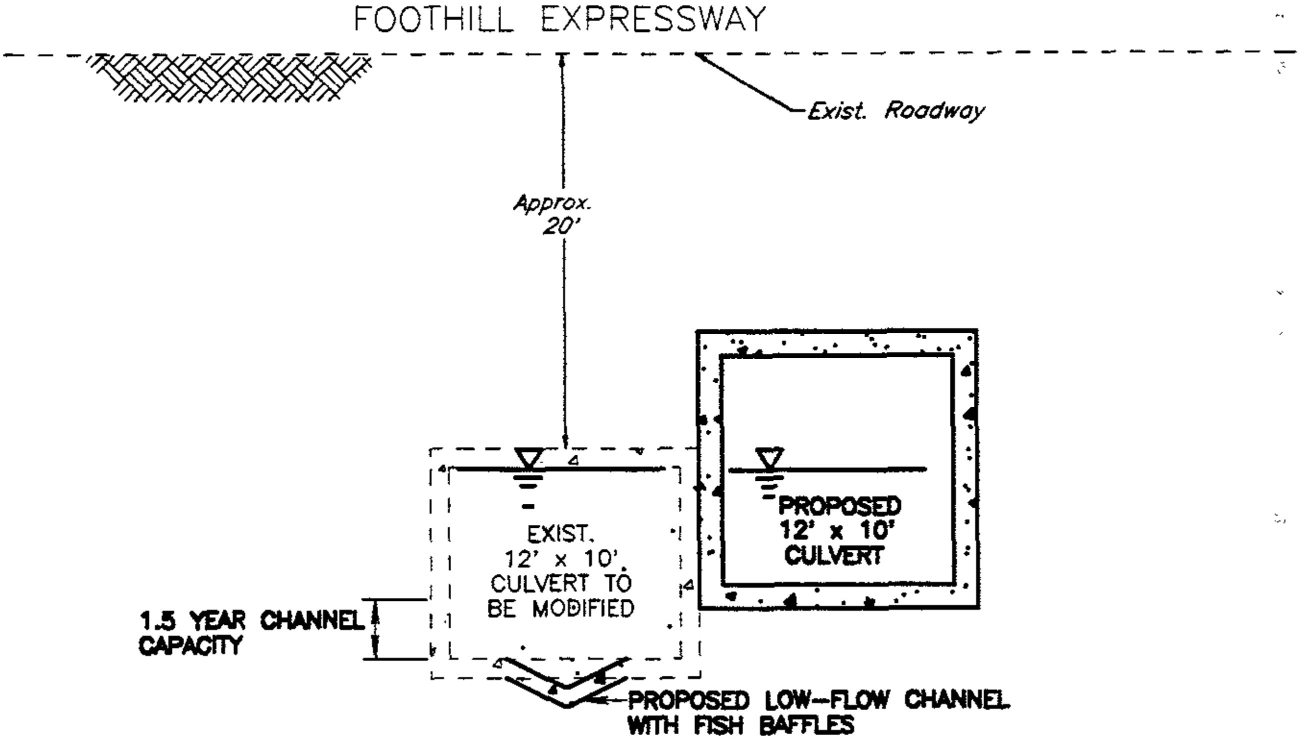
Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommends:

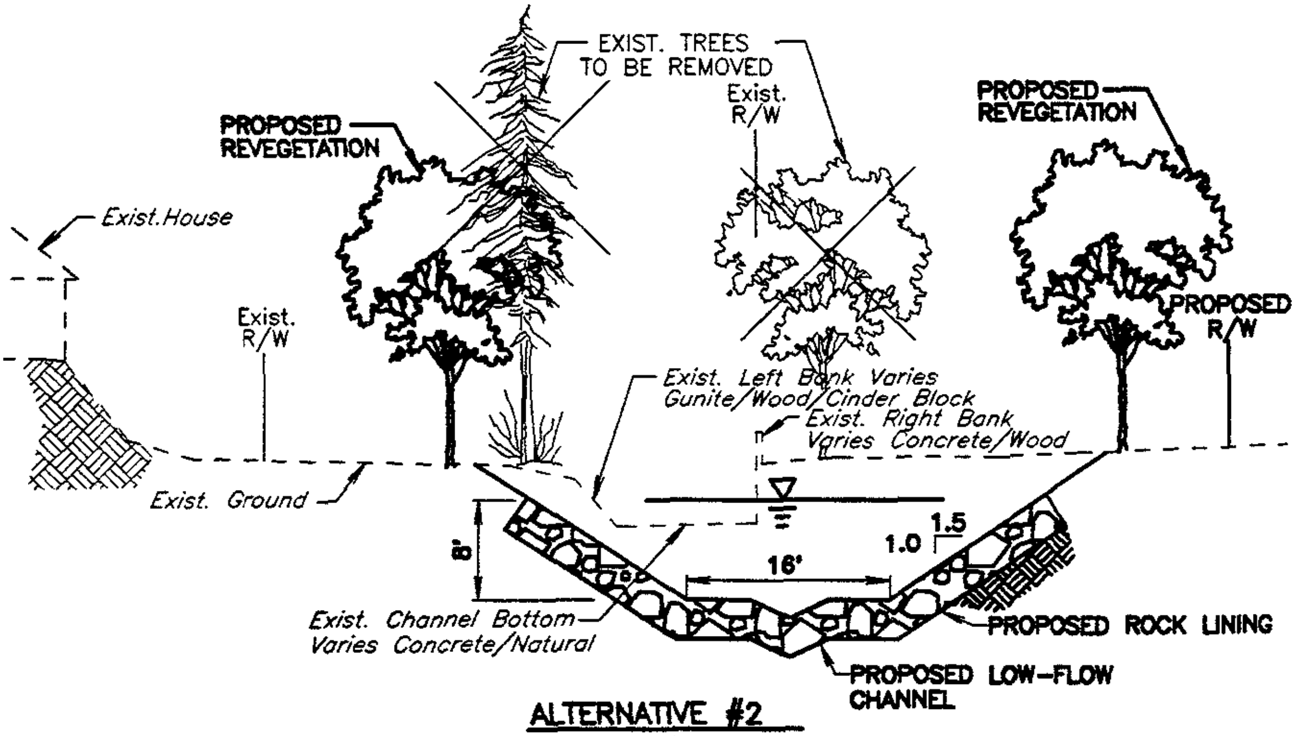
- Vegetation growth including giant cane and eucalyptus shoots and debris such as glass, cans, and garden debris should be removed from the creek channel to improve the channel capacity.

- Encroachment into the creek channel should be discouraged in this reach. Increased channel velocities with localized erosional impacts may result from channel encroachment.

- In the section of the creek downstream of West Edith Avenue, as the existing vertical wooden walls fail and require replacement, replace them with a wider channel with sloping sides. Protection of areas likely to be scoured would also be required until the entire section of creek conforms to the preferred configuration. This is illustrated in Figure 5.14.


FOOTHILL EXPRESSWAY
Exist. Roadway
Approx. 20'
EXIST. 12' x 10' CULVERT TO BE MODIFIED
PROPOSED 12' x 10' CULVERT
1.5 YEAR CHANNEL CAPACITY
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES

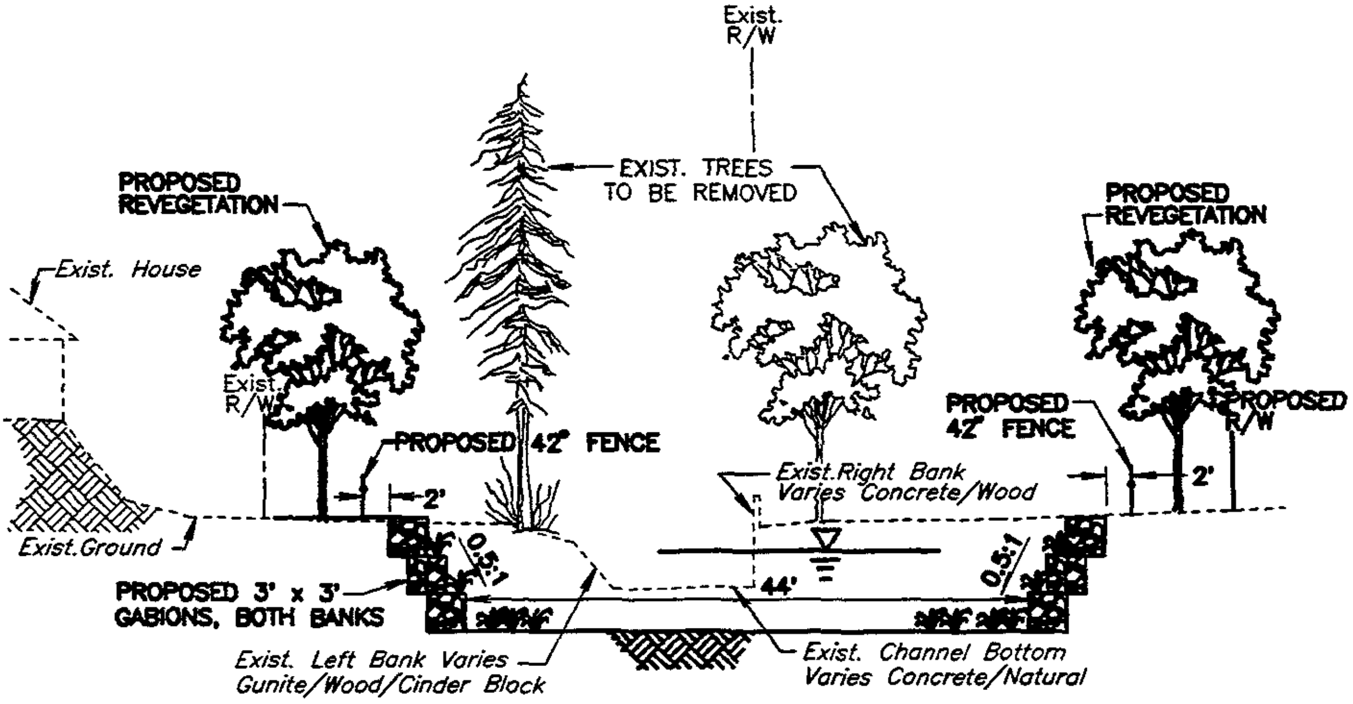
ALTERNATIVE #1
ADDITIONAL CULVERT
AT FOOTHILL EXPRESSWAY


EXIST. TREES TO BE REMOVED
PROPOSED REVEGETATION
Exist. R/W
PROPOSED REVEGETATION
Exist. House
Exist. R/W
PROPOSED R/W
Exist. Left Bank Varies Gunite/Wood/Cinder Block
Exist. Right Bank Varies Concrete/Wood
Exist. Ground
8'
1.0
1.5
16'
Exist. Channel Bottom Varies Concrete/Natural
PROPOSED ROCK LINING
PROPOSED LOW-FLOW CHANNEL

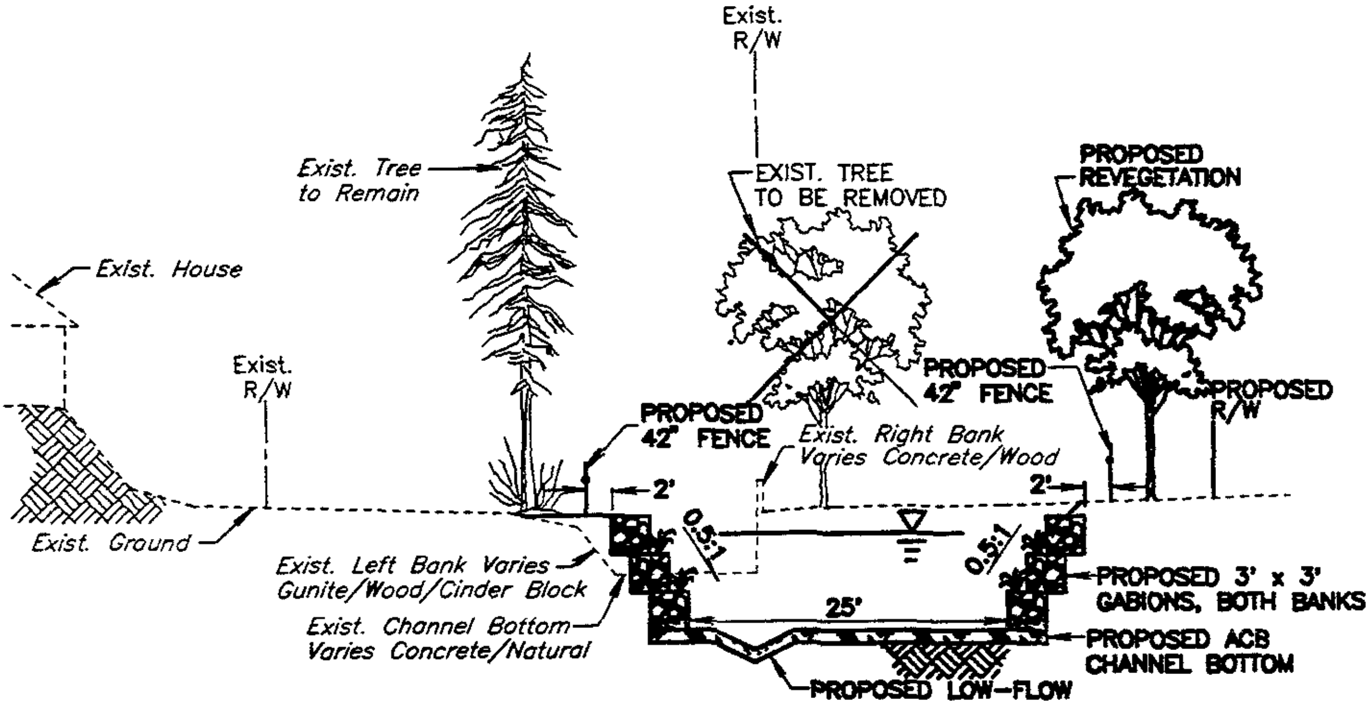
ALTERNATIVE #2
ROCK LINING

Figure 5.8

TYPICAL SECTIONS
REACH 5 FEASIBLE ALTERNATIVES
NTS



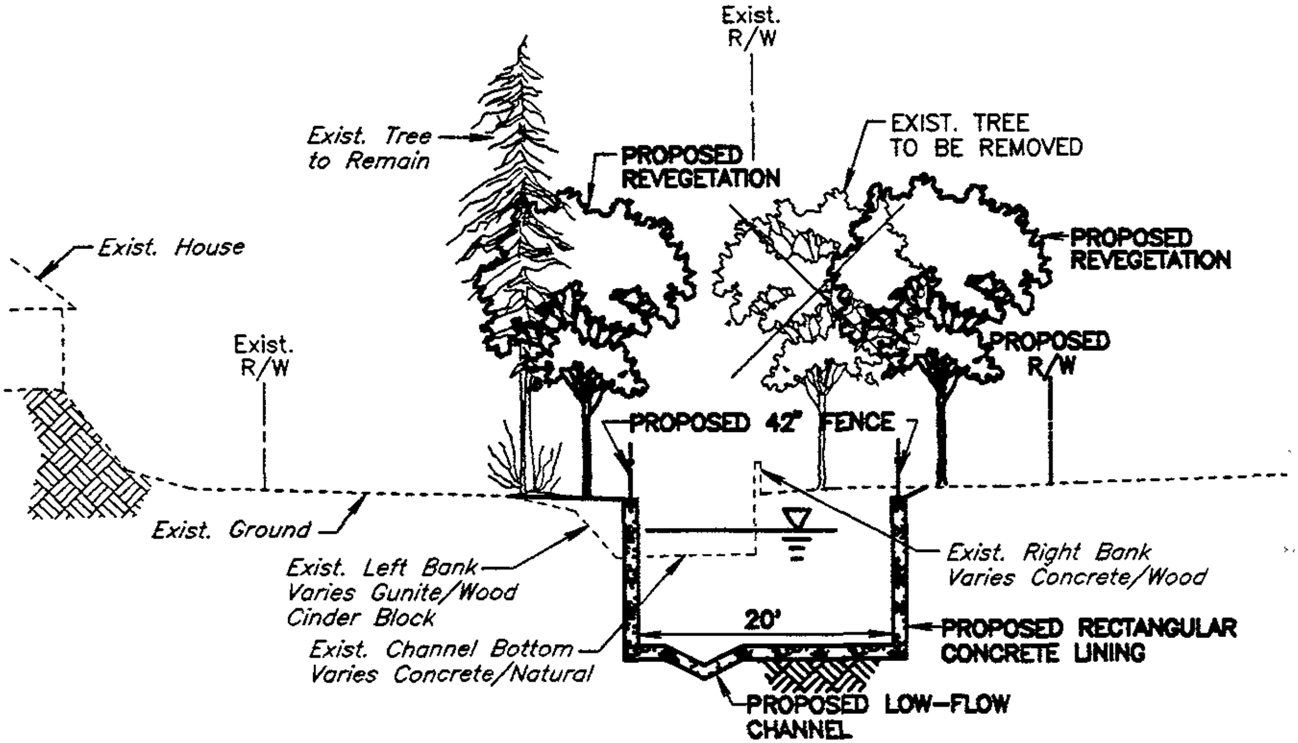
ALTERNATIVE #3
GABION LINING/NATURAL CHANNEL BOTTOM



ALTERNATIVE #4
GABION/ARTICULATED
CONCRETE BLOCK LINING

Figure 5.9

TYPICAL SECTIONS
REACH 5 FEASIBLE ALTERNATIVES
NTS



ALTERNATIVE #5
RECTANGULAR CONCRETE LINING

Figure 5.10

TYPICAL SECTIONS
REACH 5 FEASIBLE ALTERNATIVES
NTS

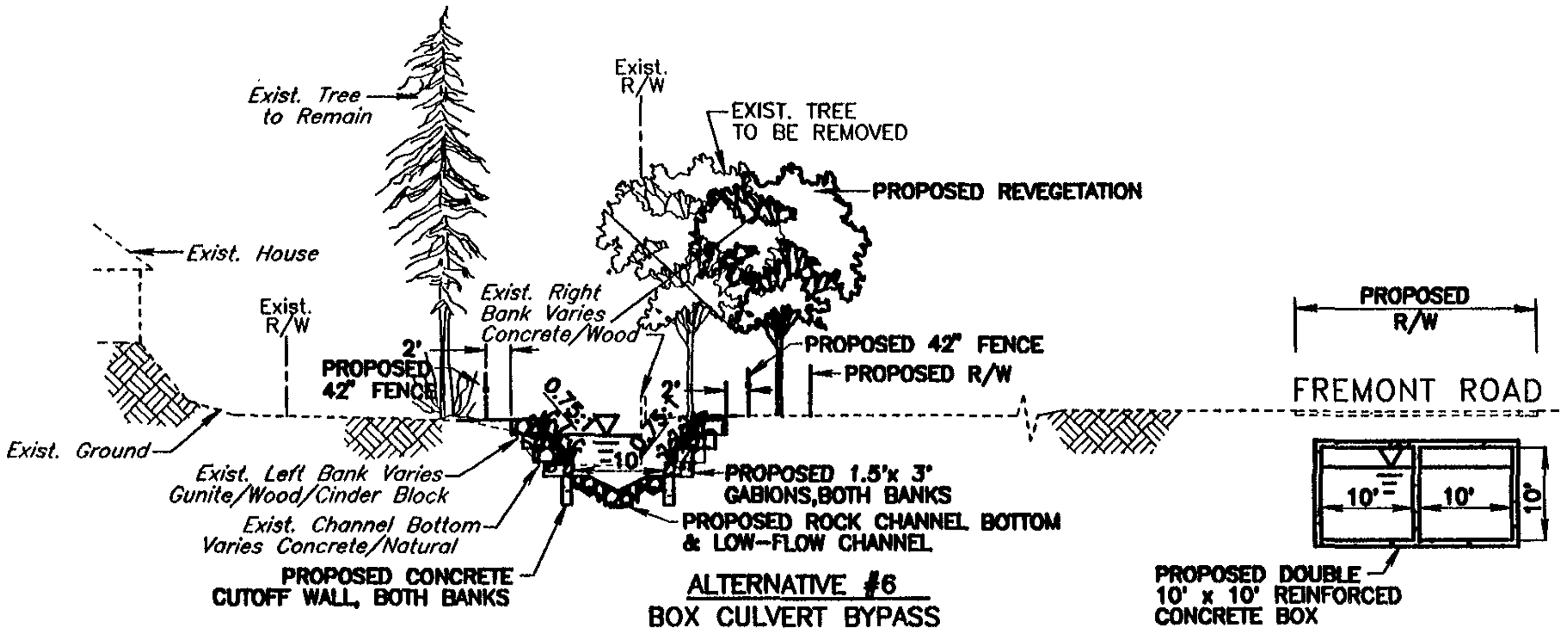
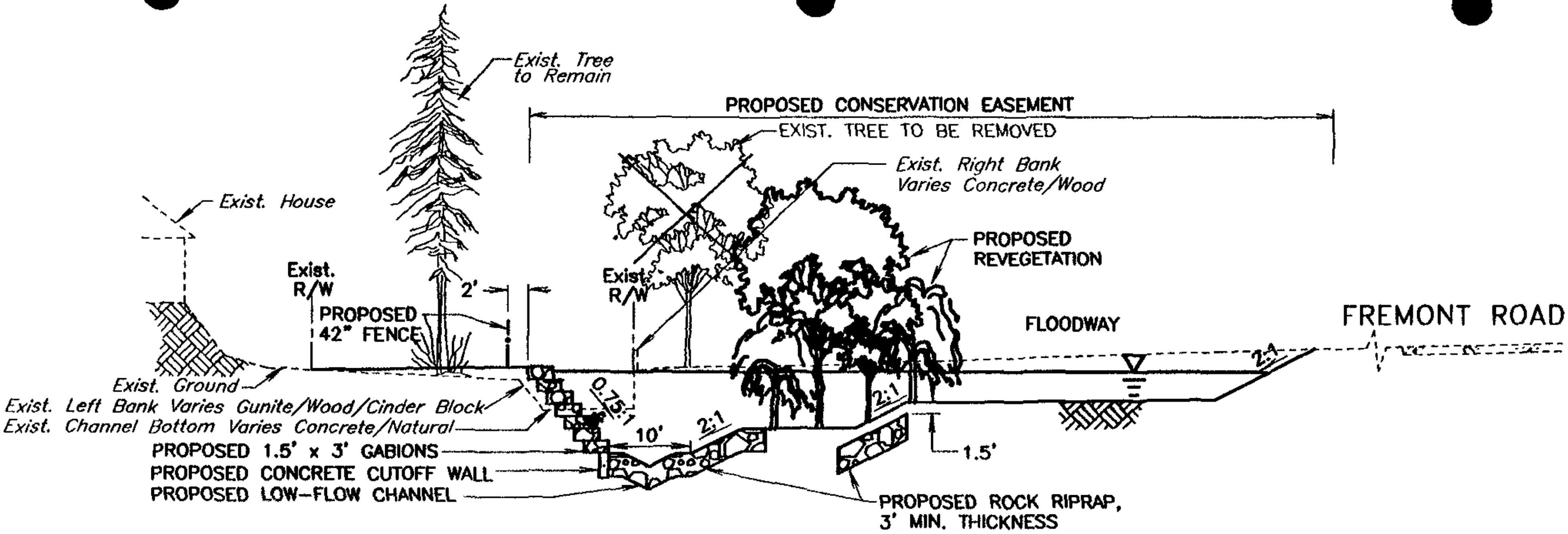


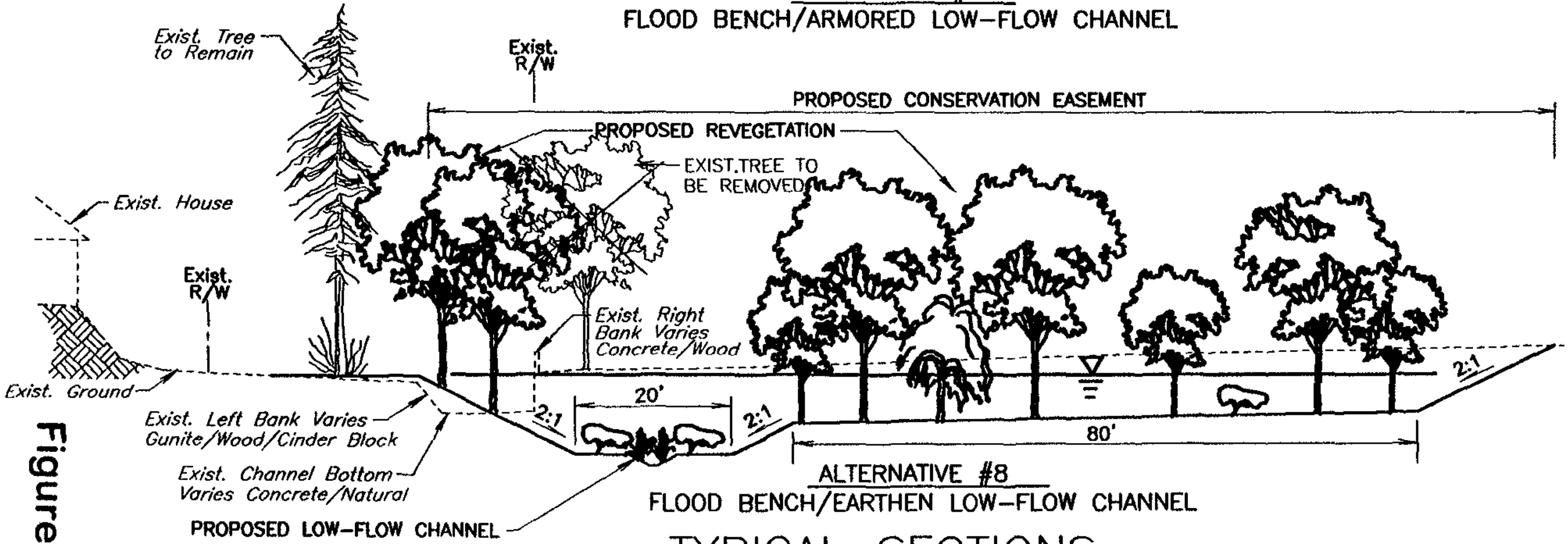
Figure 5.11

TYPICAL SECTIONS
REACH 5 FEASIBLE ALTERNATIVES
NTS


Exist. Tree to Remain
PROPOSED CONSERVATION EASEMENT
EXIST. TREE TO BE REMOVED
Exist. Right Bank Varies Concrete/Wood
Exist. House
PROPOSED REVEGETATION
Exist. R/W
2'
Exist. R/W
PROPOSED 42" FENCE
FLOODWAY
FREMONT ROAD
2:1
Exist. Ground
Exist. Left Bank Varies Gunite/Wood/Cinder Block
Exist. Channel Bottom Varies Concrete/Natural
0.75:1
2:1
10'
2:1
PROPOSED 1.5' x 3' GABIONS
1.5'
PROPOSED CONCRETE CUTOFF WALL
PROPOSED LOW-FLOW CHANNEL
PROPOSED ROCK RIPRAP, 3' MIN. THICKNESS

ALTERNATIVE #7

FLOOD BENCH/ARMORED LOW-FLOW CHANNEL

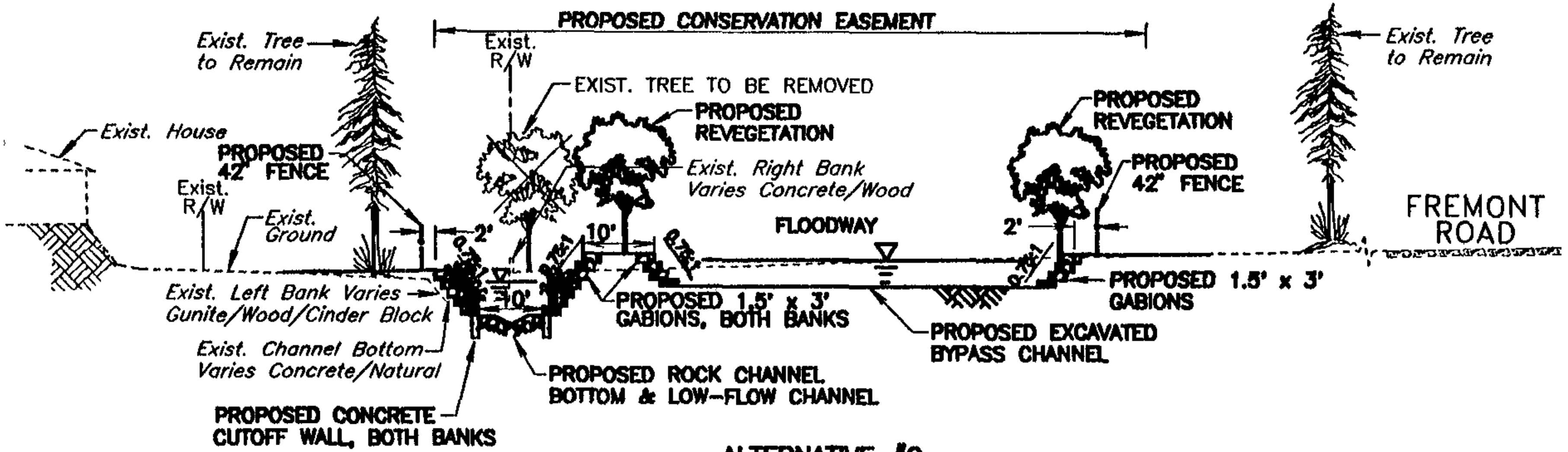

Exist. Tree to Remain
Exist. R/W
PROPOSED CONSERVATION EASEMENT
PROPOSED REVEGETATION
EXIST. TREE TO BE REMOVED
Exist. House
Exist. R/W
Exist. Right Bank Varies Concrete/Wood
2:1
Exist. Ground
Exist. Left Bank Varies Gunite/Wood/Cinder Block
2:1
20'
2:1
80'
Exist. Channel Bottom Varies Concrete/Natural
PROPOSED LOW-FLOW CHANNEL

ALTERNATIVE #8

FLOOD BENCH/EARTHEN LOW-FLOW CHANNEL

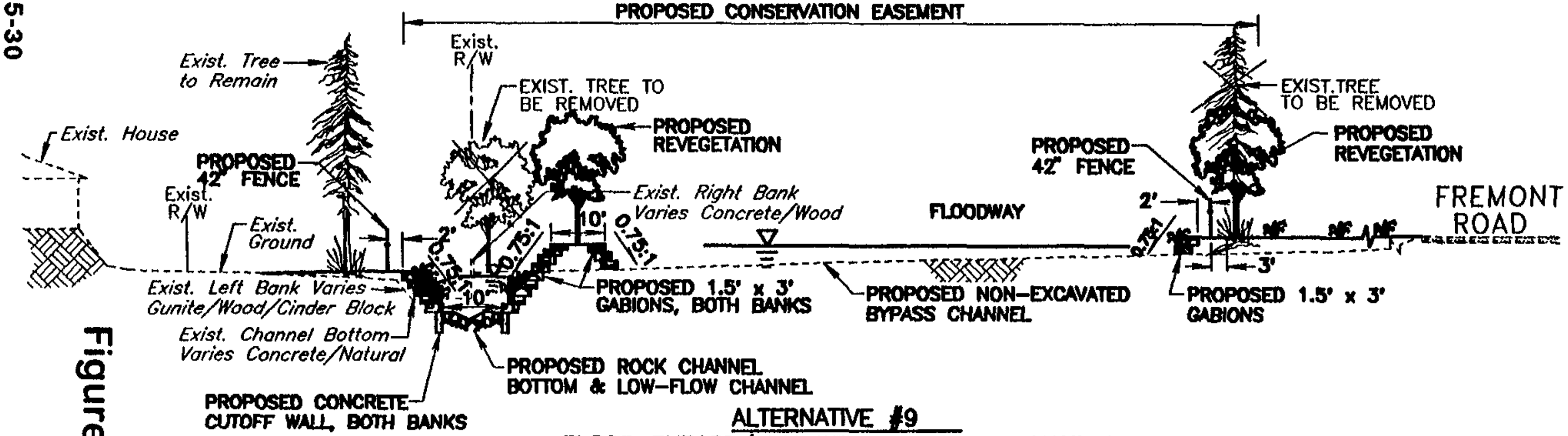
TYPICAL SECTIONS
REACH 5 FEASIBLE ALTERNATIVES
NTS

Figure 5.12


PROPOSED CONSERVATION EASEMENT
Exist. Tree to Remain
Exist. R/W
EXIST. TREE TO BE REMOVED
PROPOSED REVEGETATION
Exist. House
PROPOSED 42" FENCE
Exist. Right Bank Varies Concrete/Wood
Exist. R/W
Exist. Ground
2'
10'
0.75:1
FLOODWAY
2'
PROPOSED REVEGETATION
PROPOSED 42" FENCE
Exist. Tree to Remain
FREMONT ROAD
10'
Exist. Left Bank Varies Gunite/Wood/Cinder Block
PROPOSED 1.5' x 3' GABIONS, BOTH BANKS
PROPOSED 1.5' x 3' GABIONS
PROPOSED EXCAVATED BYPASS CHANNEL
Exist. Channel Bottom Varies Concrete/Natural
PROPOSED ROCK CHANNEL BOTTOM & LOW-FLOW CHANNEL
PROPOSED CONCRETE CUTOFF WALL, BOTH BANKS

ALTERNATIVE #9

FLOOD BYPASS/ARMORED LOW-FLOW CHANNEL
(NARROW, EXCAVATED BYPASS CHANNEL)

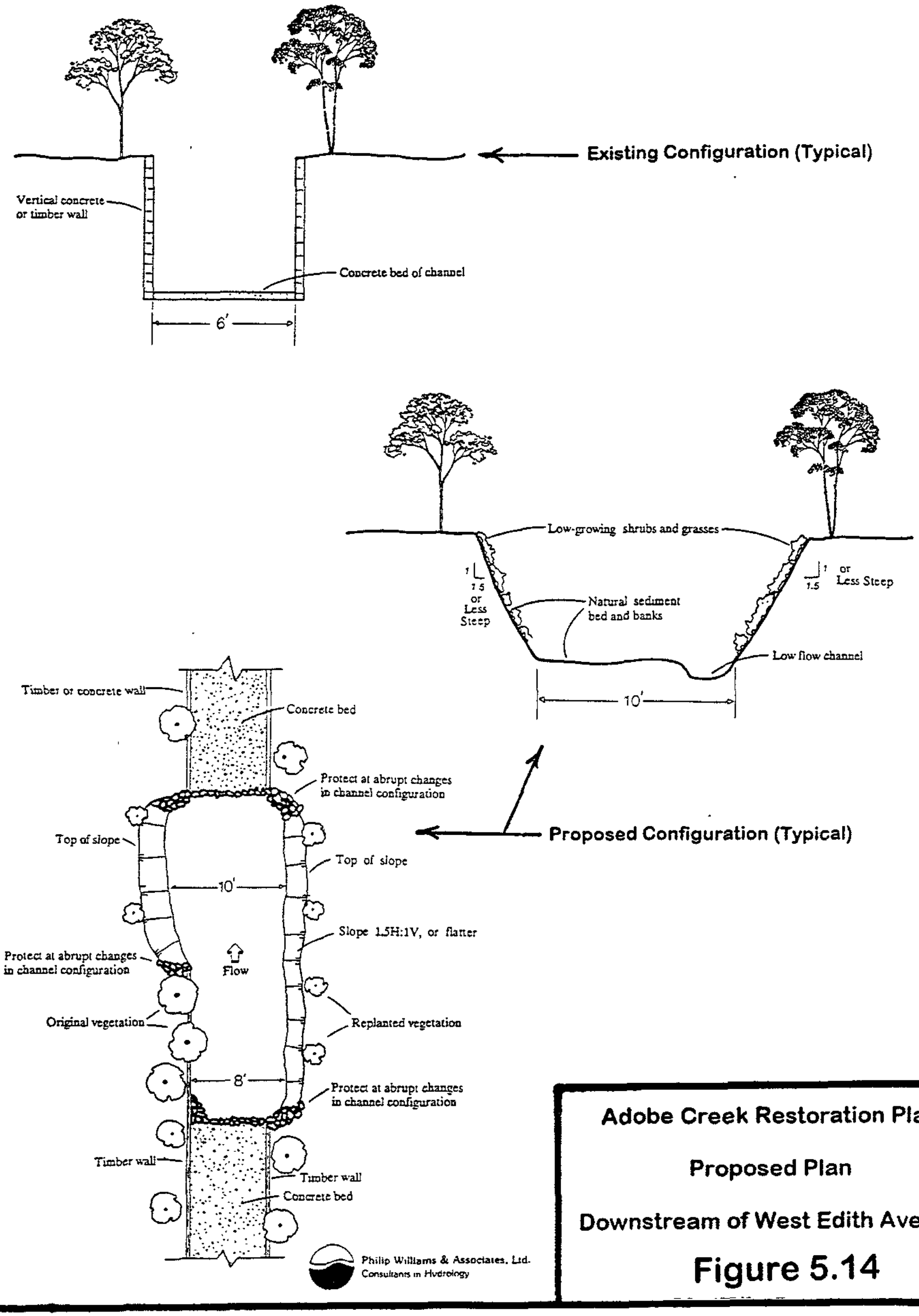

PROPOSED CONSERVATION EASEMENT
Exist. Tree to Remain
Exist. R/W
EXIST. TREE TO BE REMOVED
PROPOSED REVEGETATION
Exist. House
PROPOSED 42" FENCE
Exist. R/W
Exist. Ground
Exist. Right Bank Varies Concrete/Wood
10'
0.75:1
2'
FLOODWAY
EXIST. TREE TO BE REMOVED
PROPOSED 42" FENCE
PROPOSED REVEGETATION
2'
3'
FREMONT ROAD
10'
Exist. Left Bank Varies Gunite/Wood/Cinder Block
PROPOSED 1.5' x 3' GABIONS, BOTH BANKS
PROPOSED NON-EXCAVATED BYPASS CHANNEL
PROPOSED 1.5' x 3' GABIONS
Exist. Channel Bottom Varies Concrete/Natural
PROPOSED ROCK CHANNEL BOTTOM & LOW-FLOW CHANNEL
PROPOSED CONCRETE CUTOFF WALL, BOTH BANKS

ALTERNATIVE #9

FLOOD BYPASS/ARMORED LOW-FLOW CHANNEL
(WIDE, NON-EXCAVATED BYPASS CHANNEL)

TYPICAL SECTIONS
REACH 5 FEASIBLE ALTERNATIVES
NTS

Figure 5.13


Existing Configuration (Typical)
Vertical concrete or timber wall
Concrete bed of channel
6′
Low-growing shrubs and grasses
1
1.5
or Less Steep
Natural sediment bed and banks
Low flow channel
10′
Proposed Configuration (Typical)
Timber or concrete wall
Concrete bed
Protect at abrupt changes in channel configuration
Top of slope
10′
Top of slope
Slope 1.5H:1V, or flatter
Protect at abrupt changes in channel configuration
Flow
Original vegetation
Replanted vegetation
8′
Protect at abrupt changes in channel configuration
Timber wall
Timber wall
Concrete bed

Philip Williams & Associates, Ltd.
Consultants in Hydrology

Adobe Creek Restoration Plan

Proposed Plan

Downstream of West Edith Avenue

Figure 5.14

TABLE 5.7
Summary of Feasible Alternatives—Reach 5

FOOTHILL EXPRESSWAY TO WEST EDITH AVENUE—REACH 5								
#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)[1]
1[2]	Additional culvert at Foothill Expressway	Add a 12- 12-foot box culvert next to the existing culvert.	Less erosion downstream due to reduced velocities.	*Lower maintenance* costs downstream.	Traffic impacts. Construction noise impacts to Old Oak Court residences. Vegetation impacts—0.07 acres.		Annualized First Cost 83 Maintenance Cost 0 Total Annual Cost 83	R/W 0 Const. 742 Mit. 84 Design 185 Total 1,011
2	Rock lining	Excavated channel with rock lining for 800 feet downstream of West Edith Avenue. 50-foot top width.	Stable channel. (Current channel is undersized and self destructive.)	Replace existing wooden and concrete undersized channel. Some vegetation clearing required.	Large loss of property. Large transition structures. Vegetation impacts—0.3 acres		Annualized First Cost 84 Maintenance Cost 4 Total Annual Cost 88	R/W 0 Const. 602 Mit. 280 *Design* 151 Total 1,033
3	Gabion *lining/natural* invert	Excavated channel with a natural invert and gabions on the side slopes for 800 feet downstream of West Edith Avenue. 56-foot top width.	Stable channel. (Current channel is undersized and self destructive.)	Replace existing wooden and concrete undersized channel. Some vegetation clearing required. Periodic gabion repair *required.*	Large loss of property. Large transition structures. Vegetation impacts—0.3 acres	Wider than Alternative 2.	Annualized First Cost 99 Maintenance Cost 6 Total Annual Cost 105	R/W 0 Const. 746 *Mit.* 280 Design 187 Total 1,213
4	Gabion/ACB[3] lining	Excavated channel with ACB on the invert and gabions on the side slopes for 800 feet downstream of West Edith Avenue. 35-foot top width.	Stable channel. (Current channel is undersized and self destructive.)	Replace existing wooden and concrete undersized channel. *Some vegetation* clearing required. Periodic gabion and ACB repair required.	Loss of property. Transition structures. Vegetation *impacts—0.2 acres*	Narrower than Alternatives 2 and 3.	Annualized First Cost 113 Maintenance Cost 6 Total Annual Cost 119	R/W 0 Const. 937 Mit. 210 Design 234 Total 1,381
5	Rectangular concrete lining	Excavated channel with rectangular concrete lining for 900 feet downstream of West Edith Avenue. 20-foot channel width.	Stable channel. (Current channel is undersized and self destructive.)	Replace existing wooden and concrete undersized channel. Very low maintenance costs.	Minimal loss of property. Concrete transition structures. Fully concrete-lined channel. No in-channel percolation. Vegetation impacts—0.2 acres	*Narrowest* alternative. Lowest loss of trees.	Annualized First Cost 94 Maintenance Cost 3 Total Annual Cost 97	R/W 0 Const. 753 Mit. 210 Design 188 Total 1,151

TABLE 5.7
Summary of Feasible Alternatives—Reach 5
(continued)

FOOTHILL EXPRESSWAY TO WEST EDITH AVENUE—REACH 5								
#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)[1]
6	Box culvert bypass under Fremont Road with low-flow channel armoring	1,025-foot long double 10- by 10-foot under-ground bypass culvert from 370 feet upstream of West Edith Avenue to 780 feet downstream of West Edith Avenue. Erosion repair of bypassed creek channel included.	Erosion repair would stabilize existing creek channel. Sediment would continue to accumulate at West Edith Avenue.	Replace existing wooden and concrete undersized channel with erosion protection. Periodic vegetation clearing and slope protection repair required.	Large traffic impacts. Large inlet/outlet structures. Does not solve sediment problem at West Edith Avenue. Vegetation impacts—0.35 acres.	Most costly alternative. Major traffic impacts. Preferred alternative of local residents.	Annualized First Cost 485 Maintenance Cost 4 Total Annual Cost 489	R/W 88 Const. 4,417 Mit. 329 Design 1,104 Total 5,938
7[2]	Flood bench/gabion low-flow channel	Excavated mid-bank bench and flood bench 64-feet wide with a gabion and rock-lined low-flow channel for 900 feet downstream of West Edith Avenue.	Stable channel. (Current channel is undersized and self destructive.)	Replace existing wooden and concrete undersized channel. Some vegetation clearing required. Periodic gabion repair required.	Loss of property. Vegetation impacts—0.46 acres	Modified floodplain alternative. Preferred alternative of Los Altos/Los Altos Hills Creek Committee. Alternative requires dedication of sufficient easement for construction of alternative.	Annualized First Cost 117 Maintenance Cost 8 Total Annual Cost 125	R/W 0 Const. 1,091 Mit. 242 Design 273 Total 1,606
8	Widened earthen channel	140-foot wide excavated earthen channel with a 20-foot bottom width and an 80-foot wide bench, all planted with vegetation.	Stable channel. (Current channel is undersized and self destructive.)	Limited maintenance of improved channel. Drop structures will require periodic maintenance.	Large loss of property. Loss of use of property. Vegetation impacts—0.46 acres.		Annualized First Cost 243 Maintenance Cost 6 Total Annual Cost 249	R/W 2,000 Const. 707 Mit. 92 Design 177 Total 2,976

TABLE 5.7
Summary of Feasible Alternatives—Reach 5
(continued)

FOOTHILL EXPRESSWAY TO WEST EDITH AVENUE—REACH 5								
#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)[1]
9	Flood bypass/gabion low-flow channel	Flood bypass (narrow is excavated, wide is not) with a gabion and rock-lined low-flow channel for 800 feet downstream of West Edith Avenue.	Stable channel. (Current channel is undersized and self destructive.)	Replace existing wooden and concrete undersized channel. Some vegetation clearing required. Periodic gabion repair required.	Large loss of property. Vegetation impact—0.46 acres	Wider than Alternative 8. Less visible from Los Altos side.	Narrow— Annualized First Cost 312 Maintenance Cost 6 Total Annual Cost 318 Wide— Annualized First Cost 303 Maintenance Cost 6 Total Annual Cost 309	Narrow- R/W 2,000 Const. 1,274 Mit. 222 Design 319 Total 3,815 Wide— R/W 2,000 Const. 1,187 Mit. 222 Design 297 Total 3,706
10[2]	Maintenance program	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced by preventative measures in new maintenance program.	With continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	District has 18 easements out of 27 properties within this reach.		N/A

---

[1] "Design" includes design, geotech, and inspection.

[2] **Recommended plan.**

[3] ACB = Articulated Concrete Block.

West Edith Avenue to Burke Road (Reach 6)

Channel enlargement and floodwall alternatives were initially investigated for this reach. The floodwall alternative was found to be not practicable due to the wall height required (6 feet) and the impacts due to construction. The channel enlargement alternative would have large impacts on the adjacent properties and was also found to be not practicable.

1. Maintenance Program Only

This alternative is similar to the one described for Reaches 1 and 2 and would contain the same basic elements and benefits. In Reach 6, the District has easements on only 5 of the 22 properties that border the creek.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommends:

- Vegetation growth including giant cane and eucalyptus shoots and debris such as glass, cans, and garden debris should be removed from the creek channel to improve the channel capacity.

- Encroachment into the creek channel should be discouraged in this reach. Increased channel velocities with localized erosional impacts may result from channel encroachment.

Burke Road to O'Keefe Lane (Reaches 7-8)

Channel enlargement and floodwall alternatives were initially investigated for these reaches. The floodwall alternative was found to be not practicable due to the wall height (11 feet maximum) and the impacts due to construction. The channel enlargement alternative would require large amounts of excavation, the removal of many trees, and would come very close to some of the homes adjacent to the creek. Because of these impacts, channel enlargement was also found to be not practicable.

1. Replace Burke Road Bridge

This alternative consists of replacing the existing 15 foot-wide inadequate bridge at Burke Road with a 24 foot-wide bridge. The existing bridge at Burke Road was constructed in the early 1900s and is below 1 percent capacity. The bridge also lacks proper transition structures to the upstream and downstream channels. Because the upstream and downstream channels are well under 1 percent flood flow capacity, the construction of an adequate crossing would be of limited benefit. This bridge replacement is being proposed because of local flooding and debris buildup problems with the current bridge. Constructing a new bridge allows much more flexibility to accommodate future plans than would a box culvert.

A typical section for this alternative is shown on Figure 5.15.

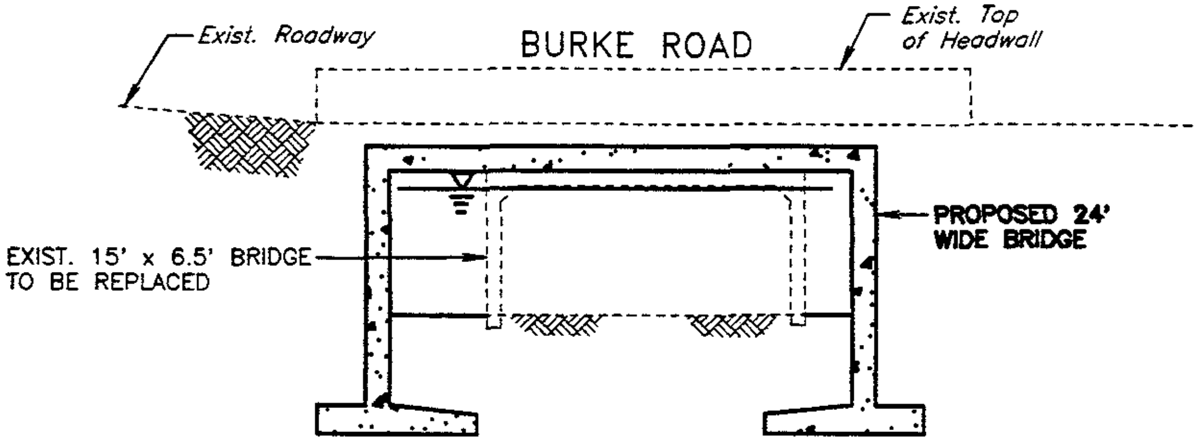
The cost of this alternative is $535,000.

2. Maintenance Program Only

This alternative is similar to the one described for Reaches 1 and 2 and would contain the same basic elements and benefits. In Reaches 7 and 8, the District has easements on 12 of the 29 properties that border the creek.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommendations are the same as for Reach 6.



ALTERNATIVE #1
BURKE ROAD BRIDGE REPLACEMENT

Figure 5.15
TYPICAL SECTIONS
REACH 7 FEASIBLE ALTERNATIVES
NTS

W:\DWGS\P\1010_101\A_SIZE\ACXS07A1.DWG

TABLE 5.8
Summary of Feasible Alternatives—Reaches 6, 7, and 8

WEST EDITH AVENUE TO BURKE ROAD—REACH 6

#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)[1]
1[2]	Maintenance program only.	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced by preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	District has 4 easements out of 23 properties within this reach.	Annualized First Cost 0 Maintenance Cost 6 Total Annual Cost 6	N/A

BURKE ROAD TO O'KEEFE LANE—REACHES 7-8

#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)[1]
1[2]	Burke Road bridge replacement	Replace existing inadequate bridge with a 24-foot wide bridge.	Lower velocity flows downstream of bridge causing less erosion.	Less maintenance downstream of new culvert.	Traffic impacts. Vegetation impacts—0.04 acres.	Does not solve flooding problem in reach. Strong support by residents.	Annualized First Cost 44 Maintenance Cost 12 Total Annual Cost 56	R/W 0 Const. 394 Mit. 42 Design 99 Total 535
2[2]	Maintenance program	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced by preventative measures in new maintenance program.	With continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	District has 12 easements out of 29 properties within these reaches.		N/A

[1] "Design" includes design, geotech, and inspection.

[2] **Recommended plan.**

O'Keefe Lane to Interstate 280 (Reach 9)

A floodwall alternative was initially investigated for this reach. The floodwall alternative was found to be not practicable due to the wall height required (9 feet maximum) and the impacts due to construction.

1. Replace O'Keefe Lane Culvert

This alternative consists of replacing the existing culvert with a bridge 15-foot by 11-foot box culvert. The existing culvert was constructed above the creek's natural grade in this reach. As a result, the creek slope is very flat upstream of the culvert and very steep downstream. This has created severe erosion problems downstream of the culvert. To address the problem, the new bridge design includes a vortex rock weir drop structure 140 feet upstream of the bridge, 2 drops incorporated into the culvert, and a vortex rock weir drop structure 190 feet downstream of the culvert. All these drops are designed to be "fish friendly." The drop was incorporated into the design so that the existing channel upstream would be minimally impacted but allow the bridge bottom to be 5 feet deeper than the existing culvert. This configuration would keep 1 percent flood flows from flowing over O'Keefe Lane, slow down velocities downstream of the bridge, and reduce the large amount of erosion that is currently occurring downstream. The culvert will also contain a low-flow fish channel with baffles.

Just replacing the culvert would not solve the flooding or erosion problems upstream of O'Keefe Lane.

A typical section for this alternative is shown on Figure 5.16.

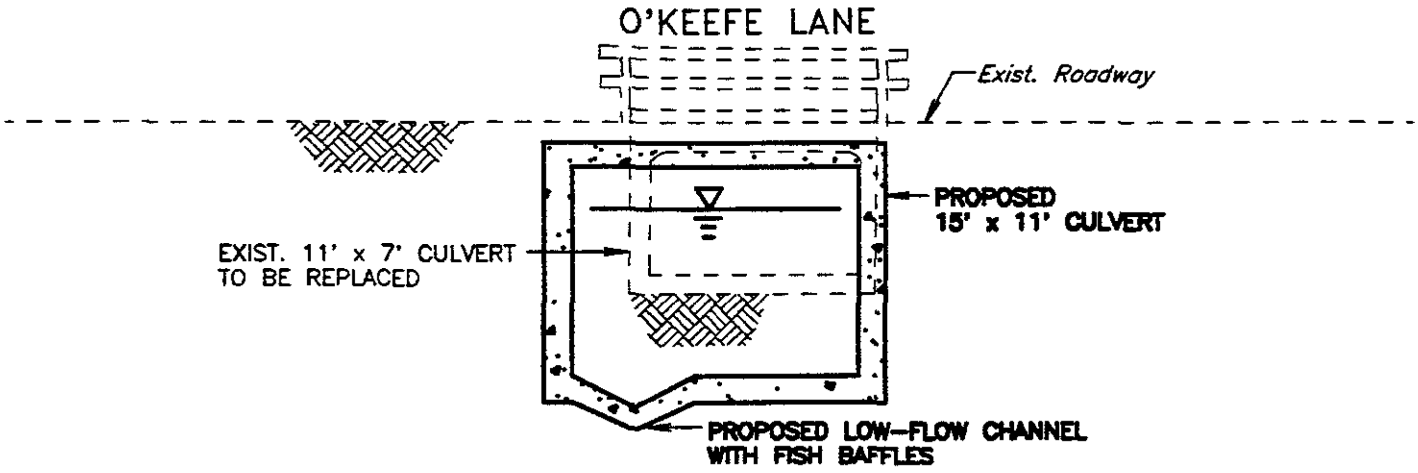
The cost of this alternative is $563,000.

2. Maintenance Program Only

This alternative is similar to the one described for Reaches 1 and 2 and would contain the same basic elements and benefits. In Reach 9, the District has an easement on 1 of the 12 properties that border the creek.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommendations are the same as for Reach 6.



ALTERNATIVE #1

O'KEEFE LANE CULVERT REPLACEMENT

Figure 5.16

TYPICAL SECTIONS

REACH 9 FEASIBLE ALTERNATIVES

NTS

TABLE 5.9
Summary of Feasible Alternatives—Reach 9

O'KEEFE LANE TO INTERSTATE 280—REACH 9								
#	**Alternative**	**Description**	**Erosion/ Sediment**	**Maintenance Program/Issues**	**Adverse Impacts**	**Remarks**	**Annual Costs ($1,000)**	**Total Cost ($1,000)**[1]
1[2]	O'Keefe Lane culvert replacement	Replace existing inadequate culvert with a 15- by 11-foot box culvert.	Lower velocity flows downstream of the new culvert causing less erosion.	Less maintenance downstream of new culvert.	Traffic impacts. Vegetation impacts—0.04 acres	Severe erosion exists downstream of current culvert.	Annualized First Cost 46 Maintenance Cost 3 Total Annual Cost 49	R/W 0 Const. 411 Mit. 49 Design 103 Total 563
2[2]	Maintenance program	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced by preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	District has 1 easement out of 12 properties within this reach.		N/A

[1] "Design" includes design, geotech, and inspection.

[2] **Recommended plan.**

Interstate 280 to El Monte Road (Reaches 10-11)

Two alternatives were initially investigated in Reach 10. One of the alternatives was the construction of a top-of-bank floodwall on the left bank to protect the college maintenance yard. The other was to construct an excavated gabion-lined channel from the Ballfield Culvert to the College Entrance Road.

Construction of the floodwall is considered not practicable due to the close proximity of the maintenance buildings to the top of the creekbank. Construction of the floodwall would require the removal of many well-established trees. Floodproofing of existing structures by the college is a more feasible option for this area. The gabion channel is not practicable because it would require the removal of several large oak trees and relocation of the road to the college maintenance yard.

1. Gabion/Armored Channel Bottom With High-Flow Benches

This alternative consists of an excavated gabion-lined low-flow channel with vegetated high flow benches on both sides above the gabions from the College Entrance Road to El Monte Road. In this reach of Adobe Creek is the exit (confluence) of a bypass channel that begins upstream of Tepa Way. Therefore, the 1 percent flow rates and corresponding improved channel sizes are different above and below the confluence of the bypass. To clarify this difference, the reach was broken into 11A and 11B. Downstream of the bypass confluence structure (Reach 11A), where the 1 percent flow rate is 2,000 cfs. The channel is configured with a 20-foot wide low-flow channel that has rock riprap on the channel bottom and gabions for 6 feet up the sides. Above the gabions there are 8-foot wide high-flow benches and a 2:1 earthen slope from the edge of the bench to natural ground. These benches and the 2:1 slope will be revegetated. In order to reduce the steep slope of this channel, four drop structures are included in this subreach. All four drop structures are designed to be "fish passable." Upstream of the bypass confluence (Reach 11B), where the 1 percent flow is 1,100 cfs, the channel is configured with a 15-foot wide low-flow channel that has a natural channel bottom and gabions for 6 feet up the sides. This portion of the channel would have one "fish passable" drop structure immediately downstream of El Monte Road and the same high-flow bench configuration as Reach 11A.

Included in this alternative would be a maintenance ramp on the left bank just upstream of the College Entrance Road. In addition, this alternative would require the relocation of 67 parking spaces from the adjacent college Parking Lot A to other places on the college campus.

This alternative does not include the replacement of the College Entrance Road culvert. The culvert replacement is not warranted because, even with a new culvert downstream, the floodwaters would continue to break out and flood Parking Lot B.

Constructing this alternative would eliminate flooding over El Monte Road, provide a dry exit road for the new firehouse (1995) located on campus near the El Monte Road culvert, and reduce maintenance costs by keeping the El Monte Road culvert and the bypass exit clear of sediment. Flooding of the Foothill College Parking Lot A would also be eliminated.

Since the creek channel was realigned by the college in the early 1960s, many native trees (approximately 50) and shrubs have been planted on the creek banks. All of the channel modification alternatives for this reach would require the trees on the right bank to be removed. It has been estimated by College maintenance personnel that about 10 of the trees could be moved to other places on the campus. Revegetation at the top of the creek bank, on the 2:1 cut slope, and on the bench will replace the remaining lost trees and shrubs.

A typical section for this alternative is shown on Figure 5.17.

The cost of this alternative is $2,156,000.

2. *Rock Lining*

This alternative consists of a similar channel design to Alternative 1. Like Alternative 1, it has two different channel configurations upstream and downstream of the bypass confluence. Downstream of the bypass confluence the channel is 8 feet deep with a bottom width of 15 feet and a top width of 55 feet. Upstream of the bypass confluence the channel is 8 feet deep with a bottom width of 7 feet and a top width of 36 feet. Both sections of the creek would be fully rock-lined.

The environmental impacts of this alternative would be equivalent to the gabion-lined alternative (Alternative 1) because the greater top width of Alternative 1 expands into the parking lot. The impact areas are located near the creek and are impacted equally by both alternatives. However, Alternative 1 provides more space for near stream on-site mitigation. This alternative would require the removal of 45 parking spaces from the adjacent college Parking Lot A. This alternative would be equivalent to Alternative 1 in the level of protection and benefits it would provide.

A typical section for this alternative is shown on Figure 5.18.

The cost of this alternative is $2,653,000.

3. *Rectangular Concrete Lining*

This alternative consists of a rectangular concrete channel from the College Entrance Road to El Monte Road. As with Alternatives 1 and 2, this alternative has two different channel configurations upstream and downstream of the bypass confluence. Downstream of the bypass confluence the channel is 11 feet deep with a width of 16 feet. Upstream of the bypass confluence the channel is 9 feet deep with a width of 12 feet. This alternative would be equivalent to Alternatives 1 and 2 in the level of protection and benefits it would provide.

This alternative is the narrowest of the three channel modification alternatives for this reach of Adobe Creek and would require the least number of trees be removed. Construction of this alternative would require the removal of approximately 35 trees and not encroach into the adjacent college Parking Lot A.

The alternative is shown on Figure 5.18.

The cost of this alternative is $1,324,000.

4. *Widened Earthen Channel*

The concept of this alternative is to restore the functions and values of the historical riparian corridor. In this reach, the creek used to meander across the area now used as Parking Lot A by Foothill College.

This alternative consists of a 160-foot wide widened excavated earthen channel that contains a meandering low-flow channel that restores the creeks meandering function. The creek meanders would be stabilized by buried bands of rock (groins) extending across the bench at the farthest point of each meander.

The entire 160-foot channel, excluding the low flow channel, would be revegetated with native species.

This alternative restores the "natural" function of the creek. Construction of this alternative would require the removal of 65 percent of Parking Lot A (287 parking spaces).

Currently, Foothill College has a total of 3,450 parking spaces on campus. With an enrollment of 14,500 students (day and evening students) and a faculty and staff of 400, the College needs all the parking spaces that currently exist.

College officials have identified a location on campus that would provide an opportunity to construct 70 to 100 new parking places. In addition, there is a 1.8 acre parcel of land on the north side of the campus that is currently for sale and could provide approximately 200 parking spaces.

Developing the 1.8 acre parcel would involve constructing a culvert crossing for Purissima Creek (the creek separates the parcel from the College), site grading, and some retaining walls for steep portions of the parcel. While this land is not owned by Foothill College, it is currently for sale. The 1.8 acre parcel is estimated to cost approximately $400,000 to $600,000 to acquire the land. An additional $4,000 per parking space would be needed to develop the parking lot, which would total approximately $1,400,000.

An alternative to developing the 1.8 acre parcel would be the construction of a multi-level parking structure at the current location of Parking Lot C. At an approximate cost of $7,000 per parking spot, this would total $3 million (217 new parking spots + 217 existing). Because of the large price of this structure, it is not considered a feasible way to mitigate the lost parking spots. Therefore, if the 1.8 acre parcel could be acquired and developed, the 287 parking spaces removed by this alternative could not be fully replaced and would be considered an unmitigatable impact. Some extra parking spaces could be made available by restriping current parking lots, but this would not equal the spaces removed.

A typical section for this alternative is shown on Figure 5.19.

The cost of this alternative is $3,180,000. (This cost includes the cost of parking mitigation on the 1.8 acre parcel.)

5. *Bypass Pipe*

The concept of this alternative is to provide one percent protection to a channel reach without widening the existing creek channel.

This alternative consists of a 9-foot diameter bypass pipe that begins downstream of the El Monte Road culvert, travels under the Foothill College Parking Lot A, and exits just upstream of the college entrance road culverts.

While this alternative removes enough flow from the natural creek channel to eliminate flooding in this reach, the natural-steep channel would continue to erode and self destruct as it currently does. Therefore, included in this alternative is gabion and rock erosion protection from the bypass exit to the college entrance road. All drop structures will be constructed to be "fish passable." Because the channel is being kept in its current configuration, the existing bypass channel exit structure would continue to fill with sediment as it currently does. Therefore, the impacts to the existing channel from maintenance downstream of the proposed bypass entrance would be the same with this alternative.

A typical section for this alternative is shown on Figure 5.19.

The cost of this alternative is $2,296,000.

6. *Fluvial Geomorphology Plan*

The concept of this alternative is to create a stable, naturally meandering, and naturally vegetated channel capable of carrying the 100-year flood using fluvial geomorphological techniques to recreate the historic conditions in the area.

The alternative consists of a 65-foot wide multi-stage excavated earthen channel. The first stage is 17-feet wide and is sized to contain the bankfull flow, approximately 1.5-year flow (defined in Appendix A). The second stage is 34-feet wide and is sized for the flood-prone depth (twice the bankfull depth). Above the flood-prone channel, the channel will be fully revegetated.

This channel has many benefits in that it recreates a natural, self-maintaining, meandering channel. However, it will require the construction of a new bridge and the loss of 140 parking spaces. This alternative, like Alternative 4, requires more parking space loss than can be replaced economically (see analysis for Alternative 4).

A typical section for this alternative is shown on Figure 5.20.

The cost of this alternative is $2,849,000 (this cost includes the cost of parking mitigation on the 1.8-acre parcel).

7. *Maintenance Program and Access Ramps*

This portion of the creek is entirely within the property of Foothill Community College. The District has a maintenance easement through the entire property. Upon adoption and approval, the new maintenance program and guidelines would automatically apply to these reaches. In addition, as part of any channel modification upstream of the College Entrance

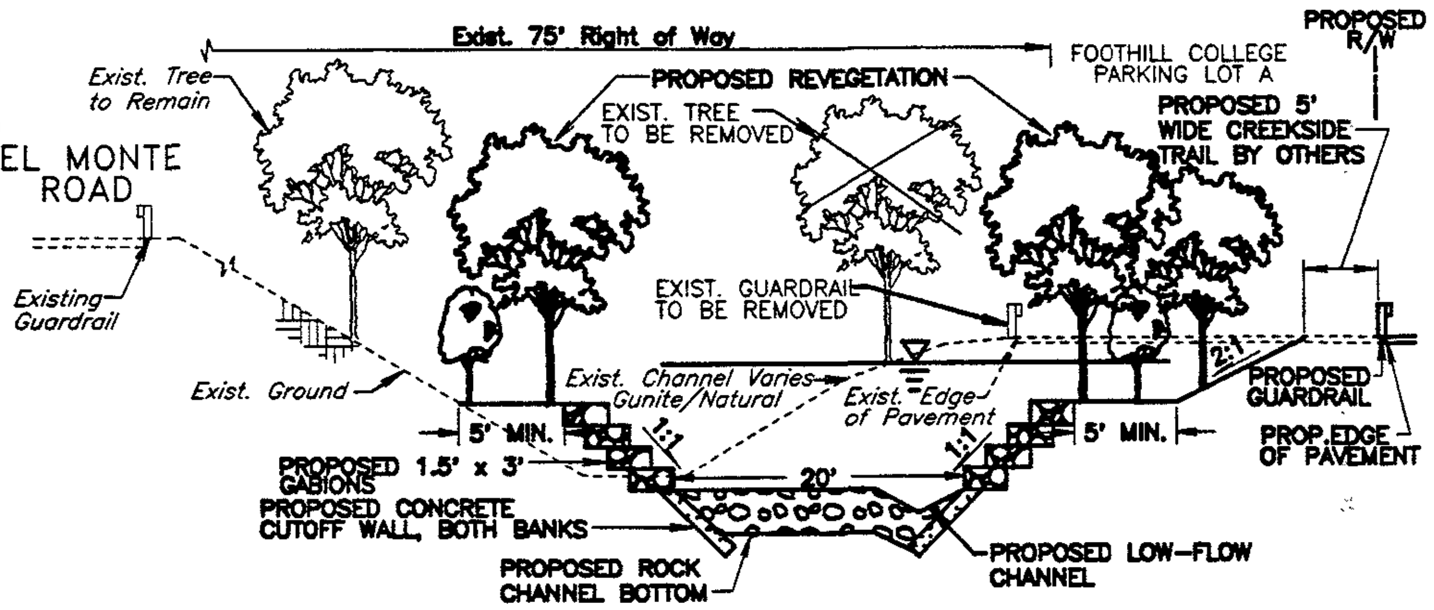
Road, a maintenance ramp is proposed for the right bank adjacent to the bypass channel exit.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommends:

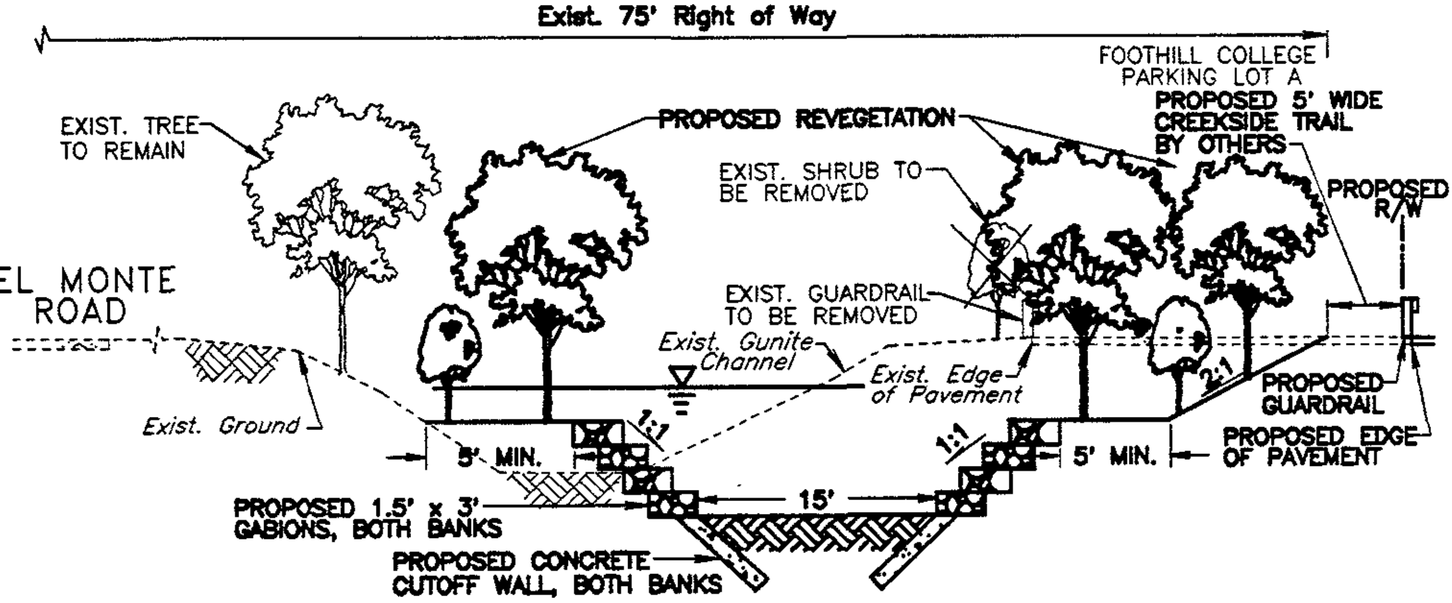
- Opportunities for recreation of a more natural streambank, while realizing the need for flood protection in these reaches. Options include stabilizing the channel bottom with grade control structures, or, preferably, expanding the creek channel and flattening the bank side slopes. Depending upon channel capacity, these banks could then be revegetated with riparian plant species.

- Debris, such as trash, boards, and other undesirable material, should be removed from the side slopes and creek channel. Garden debris, such as lawn clippings and brush cuttings should not be dumped onto the banks or into the creek channel.


Exist. 75' Right of Way
PROPOSED R/W
FOOTHILL COLLEGE PARKING LOT A
Exist. Tree to Remain
PROPOSED REVEGETATION
EXIST. TREE TO BE REMOVED
PROPOSED 5' WIDE CREEKSIDE TRAIL BY OTHERS
EL MONTE ROAD
Existing Guardrail
EXIST. GUARDRAIL TO BE REMOVED
Exist. Ground
Exist. Channel Varies Gunite/Natural
Exist. Edge of Pavement
2:1
PROPOSED GUARDRAIL
PROP. EDGE OF PAVEMENT
5' MIN.
1:1
1:1
5' MIN.
PROPOSED 1.5' x 3' GABIONS
20'
PROPOSED CONCRETE CUTOFF WALL, BOTH BANKS
PROPOSED LOW-FLOW CHANNEL
PROPOSED ROCK CHANNEL BOTTOM

ALTERNATIVE #1

GABION/ROCK CHANNEL BOTTOM
WITH HIGH FLOW BENCHES
CROSS SECTION STATION 529+00±


Exist. 75' Right of Way
FOOTHILL COLLEGE PARKING LOT A
EXIST. TREE TO REMAIN
PROPOSED REVEGETATION
PROPOSED 5' WIDE CREEKSIDE TRAIL BY OTHERS
EXIST. SHRUB TO BE REMOVED
PROPOSED R/W
EL MONTE ROAD
EXIST. GUARDRAIL TO BE REMOVED
Exist. Gunite Channel
Exist. Edge of Pavement
2:1
PROPOSED GUARDRAIL
Exist. Ground
1:1
1:1
5' MIN.
5' MIN.
PROPOSED EDGE OF PAVEMENT
PROPOSED 1.5' x 3' GABIONS, BOTH BANKS
15'
PROPOSED CONCRETE CUTOFF WALL, BOTH BANKS

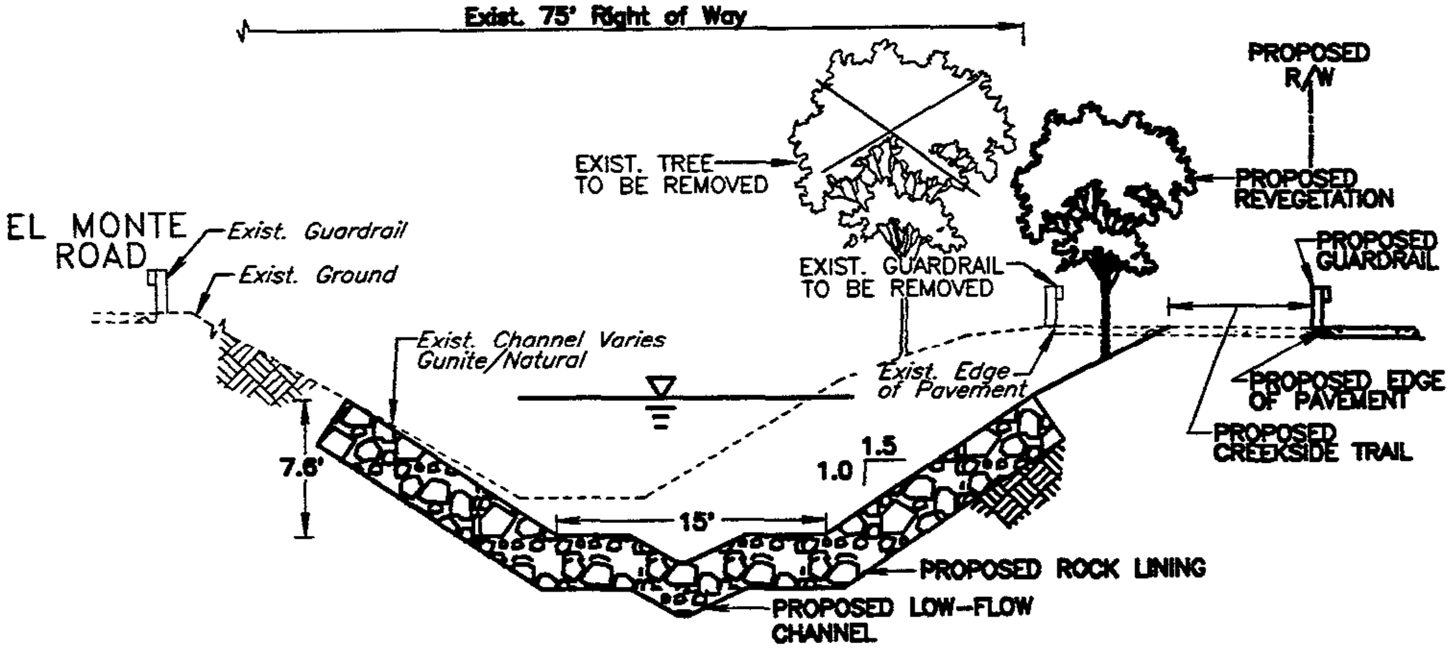
ALTERNATIVE #1

GABION/NATURAL CHANNEL BOTTOM
WITH HIGH FLOW BENCHES
CROSS SECTION STATION 534+00±

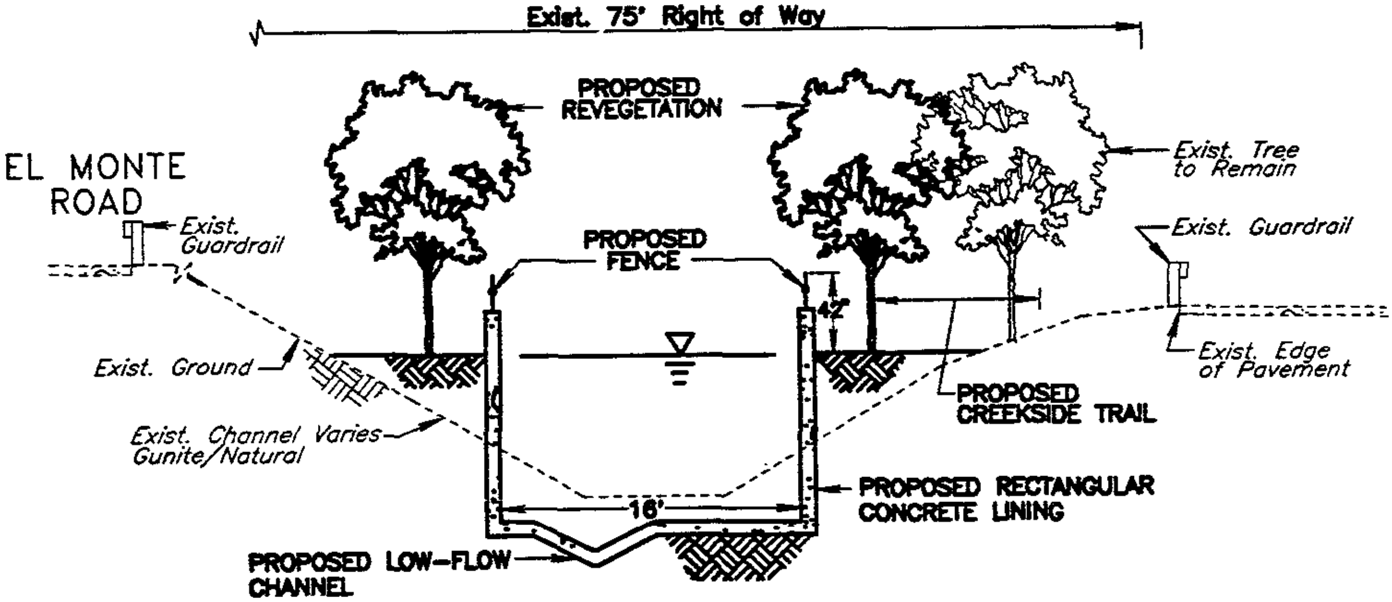
Figure 5.17

TYPICAL SECTIONS
REACH 11 FEASIBLE ALTERNATIVES
NTS

W:\DWGS\P\1010_101\A_SIZE\ACXS11A1.DWG



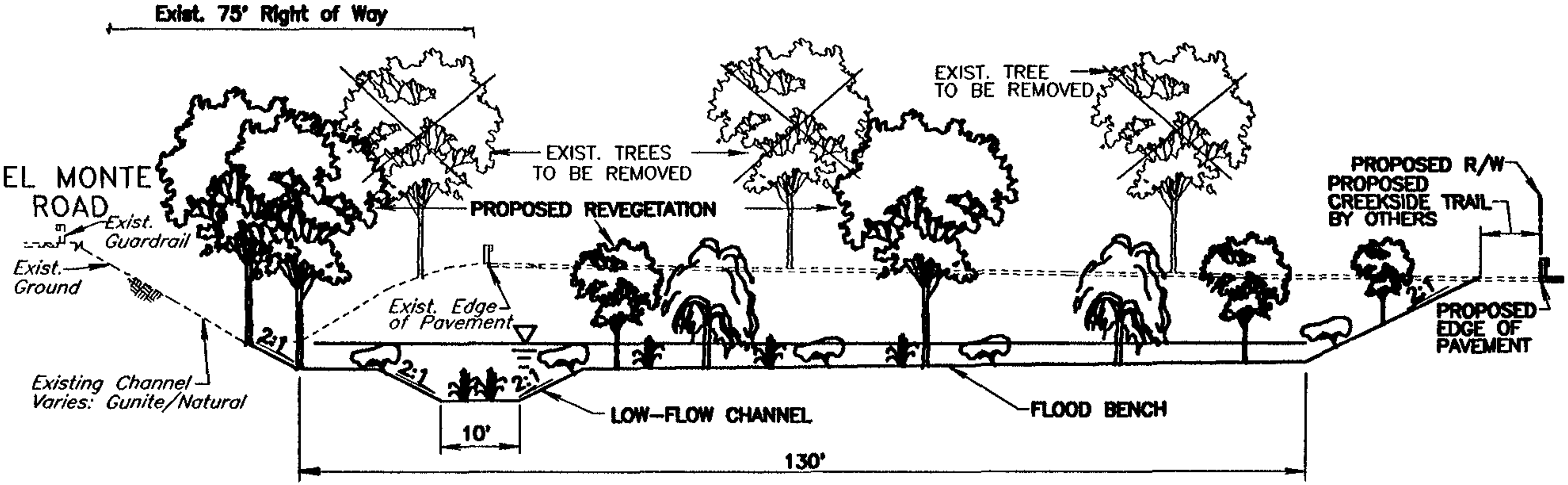
ALTERNATIVE #2
ROCK LINING



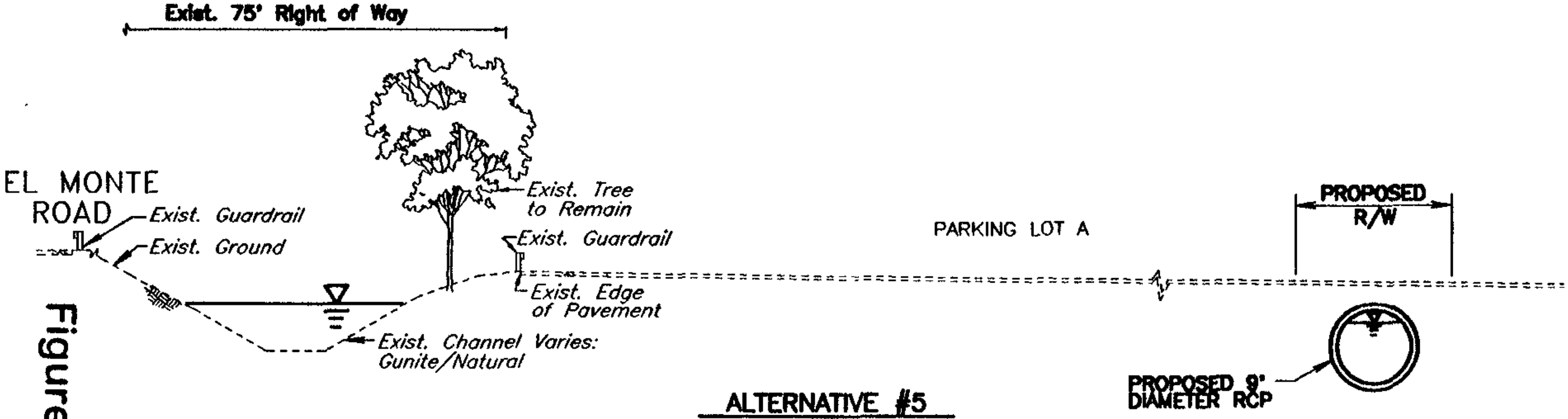
ALTERNATIVE #3
RECTANGULAR CONCRETE LINING

Figure 5.18

TYPICAL SECTIONS
REACH 11 FEASIBLE ALTERNATIVES
NTS



ALTERNATIVE #4
WIDENED EARTHEN CHANNEL

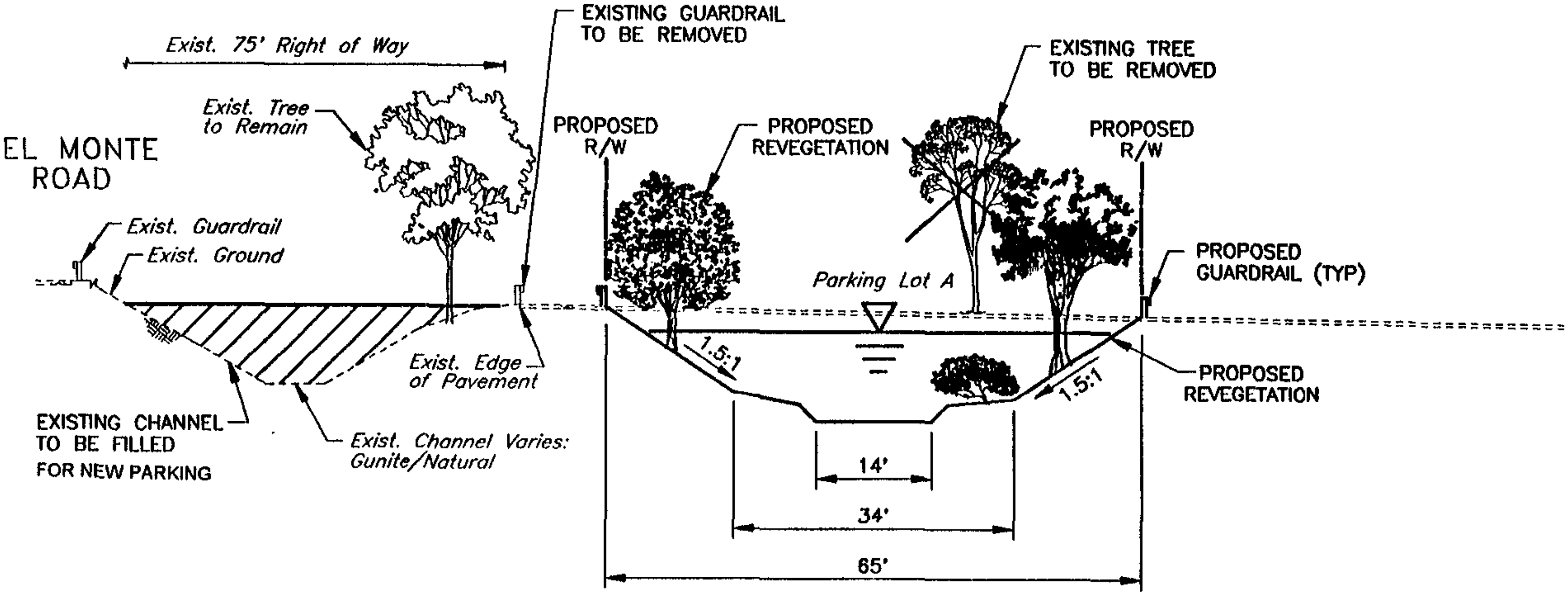


ALTERNATIVE #5
BYPASS PIPE

TYPICAL SECTIONS
REACH 11 FEASIBLE ALTERNATIVES
NTS

Figure 5.19

Figure 5.20



ALTERNATIVE #6
FLUVIAL GEOMORPHOLOGY PLAN

TYPICAL SECTIONS
REACH 11 FEASIBLE ALTERNATIVES
NTS

W:\DWGS\P\1010_101\A_SIZE\ACXS11A6

TABLE 5.10
Summary of Feasible Alternatives—Reaches 10 and 11

INTERSTATE 280 TO EL MONTE ROAD—REACHES 10 and 11								
#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)[1]
1[2]	Gabion/rock lining with high-flow benches, upper campus	Excavated channel with gabions on the side slopes of low-flow channel and vegetated high-flow benches on both sides from the Foothill College entrance to El Monte Road. Channel bottom—950 feet rock, 320 feet natural.	Stable channel with lower velocities and less sediment generated in improved reach. Channel designed to eliminate sediment buildup at El Monte Road and bypass exit.	Periodic gabion and repair required. Periodic vegetation clearing required.	Loss of 67 parking spaces. Vegetation impacts—0.40 acres.	10 trees can be moved. Bike path at top of right bank. Selected by college board of trustees.	Annualized First Cost 176 Maintenance Cost 5 Total Annual Cost 181	R/W 0 Const. 1,442 Mit. 354 Design 360 Total 2,156
2	Rock lining, upper campus	Excavated channel with rock lining from the Foothill College entrance to El Monte Road.	Stable channel with lower velocities and less sediment generated in improved reach. Channel designed to eliminate sediment buildup at El Monte Road and bypass exit.	Periodic maintenance of rock lining. Periodic vegetation clearing required.	Loss of 45 parking spaces. Vegetation impacts—0.40 acres	Large one stage channel. Less area for revegetation than Alternative 1. Similar impacts to Alternative 1. Bike path at top of right bank.	Annualized First Cost 217 Maintenance Cost 1 Total Annual Cost 218	R/W 0 Const. 1,579 Mit. 679 Design 395 Total 2,653
3	Rectangular concrete lining, upper campus	Excavated channel with rectangular concrete lining from the Foothill College entrance to El Monte Road.	Stable channel with lower velocities and less sediment generated in improved reach. Channel designed to eliminated sediment buildup at El Monte Road and bypass exit.	Very low maintenance.	No loss of parking spaces. Large concrete channel. Vegetation impacts—0.21 acres	Narrower than Alternatives 1 and 2. Lowest tree loss. Bike path at top of right bank. Strong local opposition.	Annualized First Cost 108 Maintenance Cost 1 Total Annual Cost 109	R/W 0 Const. 779 Mit. 350 Design 195 Total 1,324

TABLE 5.10
Summary of Feasible Alternatives—Reaches 10 and 11
(continued)

INTERSTATE 280 TO EL MONTE ROAD—REACHES 10 and 11								
#	**Alternative**	**Description**	**Erosion/ Sediment**	**Maintenance Program/Issues**	**Adverse Impacts**	**Remarks**	**Annual Costs ($1,000)**	**Total Cost ($1,000)**[1]
4	Widened earthen channel	160-foot wide excavated channel with meandering low-flow channel. The entire channel will be revegetated.	Stable channel with lower velocities in improved reach. Channel designed to eliminated sediment buildup at El Monte Road and bypass exit.	Very low maintenance.	Loss of 287 parking spaces in lot (65% of parking lot). Vegetation impacts—0.49 acres.	Restores meandering function of creek.	Annualized First Cost 260 Maintenance Cost 5 Total Annual Cost 265	R/W 600 Const. 1,889 Mit. 220 Design 471 Total 3,180
5	Bypass pipe	9-foot diameter bypass pipe from El Monte Road to Foothill College entrance. Existing channel would receive gabion and rock erosion protection.	Sediment would continue to be a problem at existing bypass exit.	Sediment would continue to need to be removed at existing bypass exit.	Loss of trees in parking lot along pipe alignment and on right side of channel. Vegetation impacts—0.4 acres		Annualized First Cost 188 Maintenance Cost 2 Total Annual Cost 190	R/W 0 Const. 1,613 Mit. 280 Design 403 Total 2,296
6	Fluvial geomorphological plan	65-foot wide multi-stage earthen channel from El Monte Road to the Foothill College Entrance Road	Fluvial geomorphological plan creates a stable, self-cleaning channel.	Very low maintenance	Loss of 140 parking spaces. Vegetation impacts—0.40 acres	Requires construction of a new bridge.	Annualized First Cost 233 Maintenance Cost 5 Total Annual Cost 238	R/W 600 Const. 1,644 Mit. 194 Design 411 Total 2,849
7	Maintenance program	These two reaches already have a continuous maintenance corridor.	Major erosion will be reduced by preventative measures in new maintenance program.	Maintenance of the unimproved sections of these reaches would conform to new maintenance program.	No effect.	No additional easements required.		N/A

---

[1] "Design" includes design, geotech, and inspection.

[2] **Recommended plan.**

El Monte Road to Tepa Way (Reach 12)

1. Maintenance Program Only

This alternative is similar to the one described for Reaches 1 and 2 and would contain the same basic elements and benefits. In Reach 12, the District has easements on 7 of the 8 properties that border the creek.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommendations are the same as for Reaches 10 and 11.

TABLE 5.11
Summary of Feasible Alternative—Reach 12

#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)[1]
EL MONTE ROAD TO TEPA WAY—REACH 12								
1[2]	Maintenance program only	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced by preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	District has 7 easements out of 8 properties within this reach.	Annualized First Cost 0 Maintenance Cost 4 Total Annual Cost 4	N/A

[1] "Design" includes design, geotech, and inspection.

[2] **Recommended plan.**

Tepa Way to Rhus Ridge Road (Reach 13)

1. Replace Tepa Way Culvert

This alternative consists of replacing the existing inadequate 10-foot by 12-foot box culvert with a new 15-foot by 8-foot box culvert. This culvert would also contain a low-flow fish channel with baffles. Due to under capacity channels upstream and downstream of the crossing, the replacement of the culvert would not solve the flooding problems in this reach.

A typical section for this alternative is shown on Figure 5.21.

The cost of this alternative is $370,000.

2. Improve Bypass Entrance Structure

This alternative consists of improving the entrance structure to the Adobe Creek bypass to allow it to perform more efficiently during low-flow and storm events. The bypass, which was constructed in 1975, runs from 400 feet upstream of Tepa Way to Foothill College for a distance of 2,200 feet. The bypass was designed so that the existing creek would carry flows up to 1,000 cfs, at which point the bypass would take the remaining flows. The inlet was constructed with wooden flashboards that would keep low flows in the creek but would rupture at an appropriate point to split the high flows. The flashboard system requires frequent monitoring and replacement of the boards.

With this alternative, the weir structure at the entrance of the bypass channel will be redesigned to consist of a permanent, low maintenance system. In addition, the weir structure can be designed to keep the majority of the sediment bed load in the natural creek bed, eliminating the cost of cleaning out the bypass periodically. This design would also keep the low flows out of the bypass and in the natural channel.

A typical section for this alternative is shown on Figure 5.21.

The cost of this alternative is $30,000.

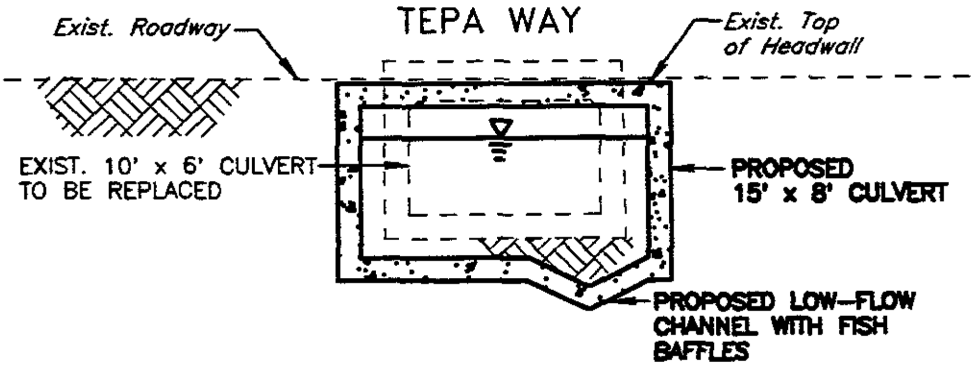
3. Maintenance Program Only

This alternative is similar to the one described for Reaches 1 and 2 and would contain the same basic elements and benefits. In Reach 13, the District has easements on five of the six properties that border the creek.

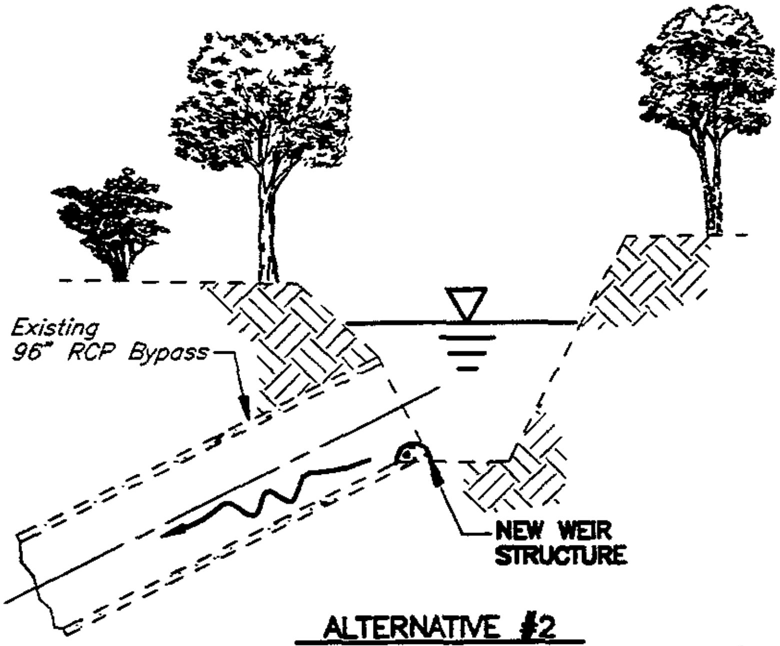
Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommendations are the same as for Reaches 10 and 11 with the addition of:

- At the entrance of the bypass pipe upstream of Tepa Way, flashboards should be installed to avoid the diversion of low flows from the natural channel. The entrance of the bypass is fitted with slots for the flashboards, although no flashboards are presently installed.


TEPA WAY
Exist. Roadway
Exist. Top of Headwall
EXIST. 10' x 6' CULVERT TO BE REPLACED
PROPOSED 15' x 8' CULVERT
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES

ALTERNATIVE #1
TEPA WAY CULVERT REPLACEMENT



ALTERNATIVE #2
BYPASS ENTRANCE STRUCTURE MODIFICATION

Figure 5.21
TYPICAL SECTIONS
REACH 13 FEASIBLE ALTERNATIVES
NTS

TABLE 5.12
Summary of Feasible Alternatives—Reach 13

TEPA WAY TO RHUS RIDGE ROAD—REACH 13								
#	**Alternative**	**Description**	**Erosion/ Sediment**	**Maintenance Program/Issues**	**Adverse Impacts**	**Remarks**	**Annual Costs ($1,000)**	**Total Cost ($1,000)[1]**
1[2]	Tepa Way culvert replacement	Replace existing inadequate culvert with a 15- by 8-foot box culvert.	Lower velocity flows downstream of bridge causing less erosion.	Less maintenance downstream of new culvert.	Traffic impacts. Vegetation impacts—0.03 acres.	Does not solve flooding problem in reach.	Annualized First Cost 30 Maintenance Cost 2 Total Annual Cost 32	R/W 0 Const. 268 Mit. 35 Design 67 Total 370
2[3]	Improve bypass entrance	Replace current high maintenance entrance structure with a new structure.	Sediment bed load in pipe will be reduced.	Less maintenance of inlet structure. Periodic vegetation removal required.	Some construction impacts to residents. Negligible vegetation impacts.	Improved efficiency of entrance.	Annualized First Cost 3 Maintenance Cost 2 Total Annual Cost 5	R/W 0 Const. 24 Mit. 0 Design 6 Total 30
3[3]	Maintenance program.	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced by preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	District has 5 easements out of 6 properties within this reach.		N/A

[1] "Design" includes design, geotech, and inspection.

[2] Deferred bridge. Unspecified schedule. A 1% design is included in the plan for when the bridge needs to be replaced for other reasons.

[3] **Recommended plan.**

Rhus Ridge Road to Francemont Avenue (Reach 14)

1. Maintenance Program Only

This alternative is similar to the one described for Reaches 1 and 2 and would contain the same basic elements and benefits. In Reach 14, the District has no easements on the seven properties that border the creek. The majority of this reach consists of the Town of Los Altos Hills open space. It is anticipated when the Francemont Estates Subdivision (downstream of Francemont Avenue) is completed, approximately three easements will be dedicated to the District.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommendations are the same as for Reaches 10 and 11 with the addition of:

- The two drop structures downstream of Francemont Avenue have been eroded at the abutments. These structures should be protected with riprap or gabions to avoid failure.

Francemont Avenue to Murietta Lane (Reach 15)

1. Maintenance Program Only

This alternative is similar to the one described for Reaches 1 and 2 and would contain the same basic elements and benefits. In Reach 15, the District has no easements on the nine properties that border the creek. It is anticipated when the Adobe Creek Estates Subdivision is completed, seven easements (⅓ of the reach) will be dedicated to the District.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommendations are the same as for Reaches 10 and 11.

Murietta Lane to Upstream Moody Road (Reach 16)

1. Maintenance Program Only

This alternative is similar to the one described for Reaches 1 and 2 and would contain the same basic elements and benefits. In Reach 16, the District has no easements on the two properties that border the creek. The majority of this reach is the Hidden Villa Trust Property, which currently does all of their own maintenance work.

Adobe Creek Restoration Plan Recommendations

In this section of Adobe Creek the Restoration Plan recommendations are the same as for Reaches 10 and 11 with the addition of:

- Debris from an old dump site downstream of the Hidden Villa entrance road bridge should be removed.

TABLE 5.13
Summary of Feasible Alternatives—Reaches 14, 15, and 16

RHUS RIDGE ROAD TO FRANCEMONT AVENUE—REACH 14

#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)
1[1]	Maintenance program only	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced by preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	No easements in this reach at present.	Annualized First Cost 0 Maintenance Cost 3 Total Annual Cost 3	N/A

FRANCEMONT AVENUE TO MURIETTA LANE—REACH 15

#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)
1[1]	Maintenance program only	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced by preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	No easements in this reach at present.	Annualized First Cost 0 Maintenance Cost 5 Total Annual Cost 5	N/A

MURIETTA LANE TO UPSTREAM MOODY ROAD (End of Project)—Reach 16

#	Alternative	Description	Erosion/ Sediment	Maintenance Program/Issues	Adverse Impacts	Remarks	Annual Costs ($1,000)	Total Cost ($1,000)
1[1]	Maintenance program only	Identify a continuous maintenance corridor for long-term maintenance program.	Major erosion will be reduced preventative measures in new maintenance program.	With a continuous maintenance easement corridor and a comprehensive maintenance program, maintenance would be improved.	No effect.	No easements in this reach at present. District does not currently maintain the creek on Hidden Valley Trust property (375 feet u/s Murietta Lane)	Annualized First Cost 0 Maintenance Cost 9 Total Annual Cost 9	N/A

---

[1] **Recommended plan.**

COMMUNITY INVOLVEMENT

During the course of the study, District staff has met with various homeowners, residents, businesses, and public agencies.

In response to concerns of local officials, it was decided to meet with the residents downstream of West Edith Avenue early in the study process. A series of neighborhood meetings were held in 1992 with the affected residents and 10 different alternatives were presented. At the end of the process, the residents selected the box culvert bypass as their preferred alternative. This alternative has a very high cost and significant impacts.

At the conclusion of the neighborhood meetings, the City of Los Altos and the Town of Los Altos Hills formed the Adobe Creek Reach 5 Committee. The purpose of this Committee was to "find a creative, long-term solution to preserve and restore the natural Adobe Creek (with acceptable short-term land and tree loss)." The Committee met five times and District personnel made presentations at two of the meetings. At these meetings District personnel presented four new alternatives that utilized a widened floodplain/flood bench concept and without consideration of land cost. After these meetings, the Committee selected the alternative that they felt best fit their objectives. This alternative, and the other alternatives the Committee considered, were presented to both city councils and the public at a joint City of Los Altos/Town of Los Altos Hills council meeting held July 27, 1993. After this meeting, the creek committee's selected alternative was selected as the District's preferred alternative.

In response to a request from Foothill College staff, a presentation was made to the Foothill College Board of Trustees on November 2, 1992. At that meeting, the existing creek conditions, problems, and possible alternative solutions were presented. District staff answered the Board's questions concerning Adobe Creek and the District's planning and construction process. At the conclusion of the meeting, the Board requested their staff to review the plans, gather more information, and present a revised plan to the board at a future meeting. As requested by the College Board, District personnel met with the college staff and provided more information to them. At an April 19, 1993, College Board meeting, the Board approved the District's proposed gabion-lined channel alternative for the Foothill College reach.

Since the College Board's approval, the configuration of the proposed gabion-lined alternate was changed to reduce vegetation impacts and facilitate fish passage. Because of the changes to the plan, the new plan was presented to the College Board in December 1995. At a meeting in February 1996, the Board approved the new proposed alternative configuration.

In January and February of 1994 a series of three public meetings were held to present the proposed project plan to the public. Each meeting covered a different portion of the 7½ mile study reach. At the meetings, District staff discussed the existing creek conditions; flooding, erosion, sediment and maintenance problems; and proposed alternative solutions to solve the problems. In addition, a new maintenance program was presented. The proposed plan presented was to:

1. Enlarge some inadequate culverts.
2. Improve the channel downstream of West Edith Avenue and at Foothill College.
3. Rehabilitate the entrance to the bypass channel upstream of Tepa Way.

4. Implement a new maintenance program.

The 110 people in attendance at the meetings all generally supported the proposed plan.

Some changes to the proposed plan were made as a result of comments received at the public meetings. The Burke Road culvert replacement, that was proposed as a deferred culvert replacement, was added to the scheduled construction. New "maintenance only" easement language was written for use in the new maintenance program. A copy of the new easement language is included in the Adobe Creek Watershed Real Estate Program in Appendix G.

- A public plan viewing was held in September 1995. One hundred local residents attended the viewing.

The draft project EIR was released in August 1996 and a public hearing was held in December 1996. Forty-eight residents and local government officials attended the hearing. Twenty-seven comment letters were received. These letters and the District responses are in the final project EIR.

PROJECT SELECTION

A preferred project was selected based on a comparison of costs, impacts, community input, and effectiveness in addressing concerns. The impact criteria used in selecting the preferred project include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts. To ensure all concerns were addressed, alternatives were developed in coordination with the Cities of Palo Alto and Los Altos, Town of Los Altos Hills, Foothill College, Caltrans, Hidden Villa Trust, Purissima Hills Water District, California Water Service, Pacific Bell, Pacific Gas and Electric, and people residing in or owning property within 500 feet of the creek. As project areas are constructed, any concrete rubble will be removed where appropriate.

El Camino Real to Upstream Alta Mesa Cemetery (Reaches 1-2)

The preferred alternatives (1 and 3) and recommended plan for these reaches is to replace the existing El Camino Real culvert and to pursue a new maintenance plan.

This alternative provided the most benefit at a reasonable cost and impacts that could be mitigated.

Replacement of the El Camino Real culvert will cause short-term traffic impacts. These impacts can be minimized by phased construction and managed traffic control.

Upstream Alta Mesa Cemetery to Foothill Expressway (Reaches 3-4)

No construction is planned for these reaches. The preferred alternative (2) and recommended plan is to pursue a new maintenance program.

Foothill Expressway to West Edith Avenue (Reach 5)

The preferred alternatives (1, 7 and 10) and recommended plan for this reach are to:

1. Add an additional culvert under Foothill Expressway (1).

2. Construct a gabion-lined low-flow channel along the existing creek alignment with a parallel mid-bank bench and high-flow flood bench downstream of West Edith Avenue (7)[3].

3. Pursue a new maintenance program (10).

The additional culvert under Foothill Expressway is the only viable alternative to solve the flooding problem immediately upstream of the Expressway and reduce erosion downstream. The addition of the culvert under the Expressway has potential major traffic impacts using traditional cut and cover techniques. These impacts could be minimized by using boring and jacking for the construction of the culvert and through traffic control.

In Adobe Creek downstream of West Edith Avenue five different alternative types were considered. Some of these alternatives had width and depth options within the alternative types, making up a total of 11 different alternatives.

Available right of way for channel modification is a critical issue in this portion of Reach 5 (Alternatives 2-9). The current channel is very narrow and confined and any widening requires property from adjacent residents. As discussed in the Community Involvement section of this chapter, most of the alternatives presented were unacceptable due to loss of property and mature trees.

All of the alternatives that involved excavating and widening the existing channel (rock [2]), gabion [3 and 4], and concrete [5]) were unacceptable to the community. The box culvert bypass (6) was selected by the residents downstream of West Edith Avenue as **their** preferred alternative. This alternative was not selected because of the high cost and the large social and environmental impacts it would incur. The flood bypass alternative (9) was not selected because of its large size and high cost. The widened earth alternative (8) was not selected because it would cause major impacts and require a large amount of land. In addition, Alternatives 8 and 9 are infeasible because the developer of the property has already begun construction in areas required for the alternative's function.

The selected alternative was chosen because it would have a minimal impact on property on the Los Altos side of the creek and the Town of Los Altos Hills was able to offer an easement of sufficient size through the subdivision process. In addition, the alternative was also chosen because it has support of the City of Los Altos, Town of Los Altos Hills, and the local community.

The impacts to vegetation caused by this alternative will be mitigated on-site to the maximum extent possible. This will be accomplished by planting trees and shrubs in designated revegetation areas, at the top of bank, on the mid-bank bench, on the edge of the high-flow bench, and in the rock riprap. Any mitigation required beyond what is available on site will be mitigated in the town park immediately upstream of the channel modification site.

---

[3] This alternative will only be constructed after the necessary land required is dedicated to the District.

West Edith Avenue to Burke Road (Reach 6)

No construction is planned for this reach. The preferred alternative (2) and recommended plan is to pursue a new maintenance program.

Burke Road to O'Keefe Lane (Reaches 7-8)

The preferred alternatives (1 and 2) and recommended plan is to replace the existing Burke Road culvert and to pursue a new maintenance program.

The replacement of the Burke Road culvert has strong local support.

O'Keefe Lane to Interstate 280 (Reach 9)

The preferred alternatives (1 and 2) and recommended plan for this reach is to replace the existing O'Keefe Lane culvert and to pursue a new maintenance program.

The replacement of the O'Keefe Lane culvert was selected because of the severe erosion problems downstream of the existing culvert and the flooding over O'Keefe Lane caused by the existing culvert.

The traffic impacts caused by construction can be minimized through phased construction and traffic control.

Interstate 280 to El Monte Road (Reaches 10-11)

The preferred alternative (1) and recommended plan is to construct a gabion/rock-lined channel bottom with vegetated high-flow benches from the Foothill College Entrance Road to El Monte Road.

This alternative was selected because it was acceptable to the College Board; it has a reasonable cost; removes the existing gunite channel; it improves the public accessibility of the creek with the construction of a bike trail; it has a minimal impact (loss of 67 parking spaces) on the college parking lot, and it enhances the creek environment with native plant revegetation on the low benches and up the sides of the creek banks.

The bypass pipe plan (5) was not selected because the alternative does not address the self-destructive nature of the existing channel, would not solve the sedimentation problem at the exit of the bypass pipe, and would not reduce the intensive maintenance currently required in this reach. The widened earth plan (4) was not selected because the loss of 65 percent of the parking lot was a significant unmitigatable impact to Foothill College. Space to construct 287 new parking spots was not available on campus. The fluvial geomorphology plan (6) was not selected due to the impacts caused by the loss of parking spots and the extra cost of constructing a new bridge.

A variation to the proposed plan which was developed during review by regulatory agencies is a combination of Alternative 1 and Alternative 2, the rock-lined channel alternative. The option consists of a channel similar in size to the proposed plan with armoring of the channel to the 10-year level. This option is discussed in more detail in Chapter 7. It has similar impacts and mitigation requirements to the proposed plan and some environmental advantages.

El Monte Road to Tepa Way (Reach 12)

No construction is planned for these reaches. The preferred alternative (1) and recommended plan is to pursue a new maintenance program.

Tepa Way to Rhus Ridge Road (Reach 13)

The preferred alternatives (2 and 3) and recommended plan for this reach is to reconstruct the entrance structure to the bypass channel upstream of Tepa Way and to pursue a new maintenance program.

The entrance structure modification has been selected because the existing entrance does not function properly. A new entrance structure will properly control the flow split, as well as help keep low flows and most of the sediment bed load in the main creek channel. Sediment buildup in the culvert is a problem with the existing entrance structure.

Tepa Way to Upstream of Moody Road—End of Project (Reaches 14-16)

No construction is planned for these reaches. The preferred alternative and recommended plan for these reaches is to pursue a new maintenance program.

Summary of Selected Alternatives

Table 5.14 summarizes and groups together the various alternatives for each of the reaches under broad plans having different objectives. The preferred plan is the alternatives that were selected through an evolutionary process with public meetings, city staffs, District staff, and environmental consultants. The minimum vegetation impact plan is the combination of alternatives which most avoids any environmental impact. This is the plan required for CEQA. The riparian functions and valves plan objective is to identify those alternatives which most reestablish the functions and values of the historic riparian corridor by preserving and enhancing the existing vegetation, minimizing the need for bank protection and using flatter slopes to allow for natural revegetation, expanding the riparian plantings, and creating buffer areas. For comparison, a least cost plan is also included. Table 5.15 shows the comparison between the construction costs and impact acreage of each alternative.

TABLE 5.14
Summary of Selected Alternatives

Reach	Selected Project[1]	Minimum Vegetation Impact Plan	Riparian Functions and Values Plan	Least Cost Plan
Reaches 1-2: El Camino Real to upstream Alta Mesa Cemetery	El Camino Real culvert replacement, new maintenance program	El Camino Real culvert replacement, new maintenance program	El Camino Real culvert replacement, new maintenance program	Floodwalls upstream El Camino Real, new maintenance program
Right of Way Cost:	0	0	0	1
Construction Cost:	1,353	1,353	1,353	504
Design Cost:	338	338	338	126
Mitigation: Right of Way Cost:	75	75	75	515
Revegetation Cost:	30	30	30	206
TOTAL FIRST COST:	1,796	1,796	1,796	1,352
Annual Cost:	159	159	159	122
Reaches 3-4: Upstream Alta Mesa Cemetery to Foothill Expressway	New maintenance program	New maintenance program	New maintenance program	New maintenance program
Right of Way Cost:				
Construction Cost:				
Design Cost:				
Mitigation: Right of Way Cost:				
Revegetation Cost:				
TOTAL FIRST COST:	N/A	N/A	N/A	N/A
Annual Cost:	12	12	12	12
Reach 5: Foothill Expressway to West Edith Avenue	Foothill Expressway culvert addition	Foothill Expressway culvert addition	Foothill Expressway culvert addition	Foothill Expressway culvert addition
Right of Way Cost:	0	0	0	0
Construction Cost:	742	742	742	742
Design Cost:	185	185	185	185
Mitigation: Right of Way Cost:	60	60	60	60
Revegetation Cost:	24	24	24	24
Subtotal Cost:	1,011	1,011	1,011	1,011

TABLE 5.14
Summary of Selected Alternatives
(continued)

Reach	Selected Project[1]	Minimum Vegetation Impact Plan	Riparian Functions and Values Plan	Least Cost Plan
Reach 5: Foothill Expressway to West Edith Avenue	Flood bench/gabion low-flow channel, new maintenance program	Rectangular concrete lining, new maintenance program	Widened earthen channel, new maintenance program	Rock lining, new maintenance program
Right of Way Cost:	0	0	2,000	0
Construction Cost:	1,091	753	707	602
Design Cost:	273	188	177	151
Mitigation: Right of Way Cost:	130	150	0	200
Revegetation Cost:	112	60	92	80
Sub-Total Cost:	1,606	1,151	2,976	1,033
REACH 5: TOTAL FIRST COST	2,617	2,162	3,987	2,044
Annual Cost:	220	182	331	172
Reach 6: West Edith Avenue to Burke Road	New maintenance program	New maintenance program	New maintenance program	New maintenance program
Right of Way Cost:				
Construction Cost:				
Design Cost:				
Mitigation: Right of Way Cost:				
Revegetation Cost:				
TOTAL FIRST COST	N/A	N/A	N/A	N/A
Annual Cost:	5	5	5	5

TABLE 5.14
Summary of Selected Alternatives
(continued)

Reach	Selected Project[1]	Minimum Vegetation Impact Plan	Riparian Functions and Values Plan	Least Cost Plan
Reaches 7-8: Burke Road to O'Keefe Lane	Burke Road Bridge replacement, new maintenance program	Burke Road Bridge replacement, new maintenance program	Burke Road Bridge replacement, new maintenance program	Burke Road Bridge replacement, new maintenance program
Right of Way Cost:	0	0	0	0
Construction Cost:	394	394	394	394
Design Cost:	99	99	99	99
Mitigation: Right of Way Cost:	30	30	30	30
Revegetation Cost:	12	12	12	12
TOTAL FIRST COST:	535	535	535	535
Annual Cost:	56	56	56	56
Reach 9: O'Keefe Lane to Interstate 280	O'Keefe Lane culvert replacement	O'Keefe Lane culvert replacement	O'Keefe Lane culvert replacement	O'Keefe Lane culvert replacement
Right of Way Cost:	0	0	0	0
Construction Cost:	411	411	411	411
Design Cost:	103	103	103	103
Mitigation: Right of Way Cost:	35	35	35	35
Revegetation Cost:	14	14	14	14
TOTAL FIRST COST:	563	563	563	563
Annual Cost:	49	49	49	49

TABLE 5.14
Summary of Selected Alternatives
(continued)

Reach		*Selected Project*[1]	Minimum Vegetation Impact Plan	Riparian Functions and Values Plan	Least Cost Plan
Reaches 10-11:	Interstate 280 to El Monte Road	Gabion/rock lining, upper campus	Rectangular concrete lining	Widened earthen channel	Rectangular concrete lining
Right of Way Cost:		0	0	600	0
Construction Cost:		1,442	779	1,889	779
Design Cost:		360	195	471	195
Mitigation:	Right of Way Cost:	160	250	0	250
	Revegetation Cost:	194	100	220	100
	TOTAL FIRST COST	2,156	1,324	3,180	1,324
	Annual Cost:	*185*	*109*	*265*	*109*
Reach 12:	El Monte Road to Tepa Way	New maintenance program	New maintenance program	New maintenance program	New maintenance program
Right of Way Cost:					
Construction Cost:					
Design Cost:					
Mitigation:	Right of Way Cost:				
	Revegetation Cost:				
	TOTAL FIRST COST	N/A	N/A	N/A	N/A
	Annual Cost:	4	4	4	4

TABLE 5.14
Summary of Selected Alternatives
(continued)

Reach	Selected Project[1]	Minimum Vegetation Impact Plan	Riparian Functions and Values Plan	Least Cost Plan
Reach 13: Tepa Way to Rhus Ridge Road	Improve bypass entrance, new maintenance program	Improve bypass entrance, new maintenance program	Improve bypass entrance, new maintenance program	Improve bypass entrance, new maintenance program
Right of Way Cost:	0	0	0	0
Construction Cost:	24	24	24	24
Design Cost:	6	6	6	6
Mitigation: Right of Way Cost:	10	10	10	10
Revegetation Cost::	25	25	25	25
TOTAL FIRST COST	65	65	65	65
Annual Cost:	8	8	8	8
Reaches 14-16: Rhus Ridge Road to upstream Moody Road (project limits)	New maintenance program	New maintenance program	New maintenance program	New maintenance program
Right of Way Cost:				
Construction Cost:				
Design Cost:				
Mitigation: Right of Way Cost:				
Revegetation Cost:				
TOTAL FIRST COST	N/A	N/A	N/A	N/A
Annual Cost:	17	17	17	17

TABLE 5.14
Summary of Selected Alternatives
(continued)

Reach	Selected Project[1]	Minimum Vegetation Impact Plan	Riparian Functions and Values Plan	Least Cost Plan
Total Project Costs[2]:				
Right of Way Cost:	0	0	2,600	1
Construction Cost:	5,457	4,456	5,520	3,456
Design Cost:	1,364	1,114	1,379	865
Mitigation: Right of Way Cost:	500	610	210	1,100
Revegetation Cost:	411	265	417	461
TOTAL FIRST COST	7,732	6,445	10,126	5,883
Total Annual Cost:	715	602	907	555

[1] New maintenance plan is part of selected project in all reaches. Erosion repairs are not included in this table.

[2] Total cost (and annual cost) does not include erosion repair costs.

Note: All figures in $1,000.

TABLE 5.15
Summary Table for Adobe Creek
Flood Control Construction Costs and Vegetation Impact Acreage

Reach	Selected Project	Minimum Vegetation Impact Plan	Riparian Functions and Values Plan	Least Cost Plan
Reaches 1-2 El Camino Real to upstream Alta Mesa Cemetery	El Camino Real culvert replacement, new maintenance program	El Camino Real culvert replacement, new maintenance program	El Camino Real culvert replacement, new maintenance program	El Camino Real culvert replacement, new maintenance program
Construction Cost:	$1,691	$1,691	$1,691	$630
Vegetation Impacted:	0.08 acres	0.08 acres	0.08 acres	0.52 acres
Reaches 3-4 Upstream Alta Mesa Cemetery to Foothill Expressway	New maintenance program	New maintenance program	New maintenance program	New maintenance program
Construction Cost:	None	None	None	None
Vegetation Impacted:				
Reach 5 Foothill Expressway to West Edith Avenue	Foothill culvert addition, flood bench/gabion low-flow channel	Foothill culvert addition, rectangular concrete lining	Foothill culvert addition, widened earthen channel	Foothill culvert addition, rock lining
Construction Cost:	$2,291	$1,868	$1,811	$1,680
Vegetation Impacted:	0.53 acres	0.27 acres	0.53 acres	0.37 acres
Reach 6 West Edith Avenue to Burke Road	New maintenance program	New maintenance program	New maintenance program	New maintenance program
Construction Cost:	None	None	None	None
Vegetation Impacted:				
Reaches 7-8 Burke Road to O'Keefe Lane	Burke Road Bridge replacement, new maintenance program	Burke Road Bridge replacement, new maintenance program	Burke Road Bridge replacement, new maintenance program	Burke Road Bridge replacement, new maintenance program
Construction Cost.	$493	$493	$493	$493
Vegetation Impacted:	0.04 acres	0.04 acres	0.04 acres	0.04 acres

Table 5.15
Summary Table for Adobe Creek
Flood Control Construction Costs and Vegetation Impact Acreage
(continued)

Reach	Selected Project	Minimum Vegetation Impact Plan	Riparian Functions and Values Plan	Least Cost Plan
Reach 9 O'Keefe Lane to Interstate 280	O'Keefe Lane culvert replacement	O'Keefe Lane culvert replacement	O'Keefe Lane culvert replacement	O'Keefe Lane culvert replacement
Construction Cost:	$514	$514	$514	$514
Vegetation Impacted:	0.04 acres	0.04 acres	0.04 acres	0.04 acres
Reaches 10-11 Interstate 280 to El Monte Road	Gabion/rock lining, upper campus	Rectangular concrete lining	Widened earthen channel	Rectangular concrete lining
Construction Cost:	$1,802	$974	$2,360	$974
Vegetation Impacted:	0.40 acres	0.21 acres	0.49 acres	0.21 acres
Reach 12 El Monte Road to Tepa Way	New maintenance program	New maintenance program	New maintenance program	New maintenance program
Construction Cost:	None	None	None	None
Vegetation Impacted:				
Reach 13 Tepa Way to Rhus Ridge Road	Improve bypass entrance, new maintenance program	Improve bypass entrance, new maintenance program	Improve bypass entrance, new maintenance program	Improve bypass entrance, new maintenance program
Construction Cost:	$30	$30	$30	$30
Vegetation Impacted:	0.03 acres	0.03 acres	0.03 acres	0.03 acres
Reaches 14-16 Rhus Ridge Road to upstream Mood Road	New maintenance program	New maintenance program	New maintenance program	New maintenance program
Construction Cost:	None	None	None	None
Vegetation Impacted:				
TOTAL CONSTRUCTION COSTS[1]	$6,821	$5,570	$6,899	$4,195
TOTAL VEGETATION IMPACT ACREAGE	1.12 acres	0.67 acres	1.21 acres	1.21 acres

[1] Construction cost includes design cost.

CHAPTER 6
EROSION CONTROL PROJECT ELEMENTS

This chapter outlines the project elements for the erosion sites in the Adobe Creek Watershed Planning Study. Discussed in this chapter are the: goal of the erosion control project, erosion site selection criteria, erosion protection repair methods available, construction impacts incurred, and mitigation possibilities for impacts incurred.

GOAL OF THE EROSION CONTROL PROJECT

The goal of the program is to repair the current erosion problems along Adobe Creek reestablishing a stable creek after the completion of the capital improvement project. The new maintenance measures discussed in the Maintenance Program Chapter would maintain the creek's stability.

EROSION SITE SELECTION

Soil erosion occurs both on the channel banks and bottom. As bank erosion occurs, vegetation is lost, soil is lost, property improvements may be threatened, and channel capacity may be compromised. As the creek bottom erodes, the channel becomes deeper and more incised, resulting in less stable banks with greater potential for bank erosion and failure. Increased soil erosion on the channel banks and bottom increase suspended sediment in the creek degrading aquatic habitat.

During the course of the study, District employees surveyed Adobe Creek for developing erosion problems. The sites located were broken up into three categories:

- Major
- Minor
- Noted Only

The sites identified as "*major*" were actively eroding and threatening either structures or large top-of-bank trees. The sites identified as "*minor*" were not actively eroding, but they have the potential to become "*major*" if they continue to erode. The sites identified as "*noted only*" are sites that have the potential to become erosion problems in the future.

Seventy-two erosion sites were identified during the survey. Of the 72 identified, 20 were classified as "*major,*" 28 were classified as "*minor,*" and 24 were classified as "*noted only.*" Since the survey, three of the "major" sites have been repaired by the District's Maintenance Department due to the critical nature of the erosion. In addition to the sites located, eight locations were identified as being places where the channel bottom was actively degrading and vortex rock weirs would be useful.

The 17 remaining "*major*" erosion sites and the 8 vortex rock weir locations were evaluated for repair and added to the proposed capital improvement project. These sites are summarized in Table 6.1, described in detail in the Description of the Recommended Project Chapter, and shown on the plan and profile plates at the end of the report. Photographs of typical sites are shown on Figure 6.1. The 28 "*minor*" and 24 "*noted only*" erosion sites will be monitored by maintenance personnel for any evidence of further erosion in the future. Corrective action will follow guidelines specified in the Maintenance Program Chapter.

EROSION SITE REPAIR CRITERIA AND METHODS

The objective when selecting an erosion protection method is to meet engineering requirements and provide the greatest biological enhancement with the least impacts. The engineering requirements involve the physical ability of the material to provide reliable structural support within the site constraints. This includes the ability of the material to provide lateral support to the bank and sustained protection against erosive velocities. Biological enhancement considers the ability of the method to provide opportunity for natural revegetation. Once erosion has occurred, the site constraints determined, cause of erosion determined, and ecological setting evaluated, the erosion protection method and material is selected.

Alternatives for erosion repair can be divided into three categories, live construction, mixed construction, and inert construction. Live construction consists of the traditional use of grass or live plant cuttings. Mixed construction consists of structural or mechanical methods using plant materials combined with inert materials (rock riprap, gabions, cribwalls, geocell, etc.). Inert construction consists of using only inert structural materials (sack concrete slope protection, gunite, etc.). Criteria for conditions under which each method is appropriate are discussed in detail in the Maintenance Program Chapter of this report.

The methods and material available for erosion repair are listed below and were evaluated for consideration for the repair of the 17 erosion sites **in the order presented.**

I. LIVE CONSTRUCTION

- **A. CUTTINGS**
- **B. TRANSPLANTS**
- **C. LIVE STAKING**
- **D. DIRECT SEEDING**

II. MIXED CONSTRUCTION

A. SOIL BIOENGINEERING

Contour Wattling
Brush Layering
Bank Surface Matting

B. BIOTECHNICAL SLOPE PROTECTION

Root Wads and Boulders
Soil Cellular Confinement System (Geocell)
Rock Riprap
Gabions
Articulated Concrete Block (ACB)
Crib Walls

In combination with live construction

III. INERT CONSTRUCTION

A. SACKED CONCRETE SLOPE PROTECTION (SCSP)
B. GUNITE

Detailed descriptions and diagrams of all of the methods listed above are in the Maintenance Program Chapter of this report.

In some places it was observed that the channel bottom was actively degrading. In these locations vortex rock weirs will be installed downstream of the channel bank erosion to prevent any further degradation. Bank instability and erosion may, in some cases, be directly correlated to increased bank height due to channel bottom degradation.

Vortex rock weirs will be constructed with large 4 to 5-foot diameter rock boulders and will be "keyed" into the bank to eliminate erosion. Smaller rock riprap will also be placed at the downstream side of the weir, where necessary, to form a plunge pool for aquatic habitat and to protect the weir. The size of the rock riprap will be designed so that any expected flow velocity will not be able to move the rock.

Vortex rock weirs will be limited to use where there is less than approximately 2 feet vertical change in grade. If more height is needed, multiple weirs or step pools will be installed. A detailed description of the weir and a diagram showing its configuration is contained in the Maintenance Program Chapter of this report.

EROSION SITE REPAIR IMPACTS AND MITIGATION

As previously mentioned, vegetation impacts will be avoided whenever possible; however, if vegetation must be removed for an erosion repair to be functional, the impacts will be mitigated in accordance with generally accepted practices. The impacts projected to be incurred and the mitigation required for the 17 proposed erosion repair sites and 8 vortex rock weirs are specified in the Description of the Recommended Project Chapter.

TABLE 6.1
Proposed Erosion Repair and Vortex Rock Weir Sites
Adobe Creek Watershed Planning Study

Creek Station	Reach	Description	Recommendation
255+00[1]	1	12′ vertical right bank, 50′ wide, exposed earth for whole height, Cabaña Hotel and SCVWD property.	Lay back top of slope with rock at toe, 12′ up bank, soil placed between rock riprap with joint planting.
260+80[2]	1	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
261+00[1]	1	9′ left bank, 5′ vertical at toe, exposed earth with roots at toe with ivy on bank, 30′ wide from tree to tree with outfall at center, creek is degraded 6″-8″ below outfall, Slautterback residence.	Rock at toe, 4′ up bank, 40′ total repair length, protect trees and fix outfall, no cut into existing bank, soil placed between rock riprap with joint planting.
261+60[1]	1	16′ vertical right bank, 90′ wide between 262+00 to 263+00, roots exposed throughout bank height, outside of bend, trees at top of bank, Cabaña Hotel and SCVWD property.	Rock at toe, 6′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
263+40[1]	1	16′ vertical right bank, 40′ wide, outside of bend, mid-bank is more incised than top and bottom, toe is exposed earth, bank is exposed roots, trees at top of bank, Wright residence.	Rock at toe, 6′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
297+00[1]	2	30′ left bank, 75′ wide, 0.5:1 side slope, outside of bend, top of bank is vertical with exposed earth and fence at edge beginning to slide down, bank has some vegetation, Faillace residence.	Rock protection, 14′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
304+00[1]	2	25′ vertical right bank, 40′ wide, exposed earth with roots, outside of bend, structure near top of bank, Alta Mesa Cemetery.	Sacked Concrete Slope Protection, 12′ up bank.
307+40[1]	2	22′ vertical right bank, 75′ wide, outside of bend, exposed earth for whole height, toe is more incised than top, Alta Mesa Cemetery.	Rock protection, 11′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
311+30[1]	2	35′ vertical right bank, 70′ wide, exposed earth with overhanging roots at top, bank could fail if saturated enough, Alta Mesa Cemetery.	Rock protection, 12′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
315+00[2]	3	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
316+00[1]	3	12′ left bank, 6′-7′ vertical left bank, 25′ wide, outside of bend, exposed earth with roots at toe and some rubble randomly placed, Cover residence.	Gabion slope protection, varies up to 7.5 up bank, joint planting.

TABLE 6.1
Proposed Erosion Repair and Vortex Rock Weir Sites
Adobe Creek Watershed Planning Study
(continued)

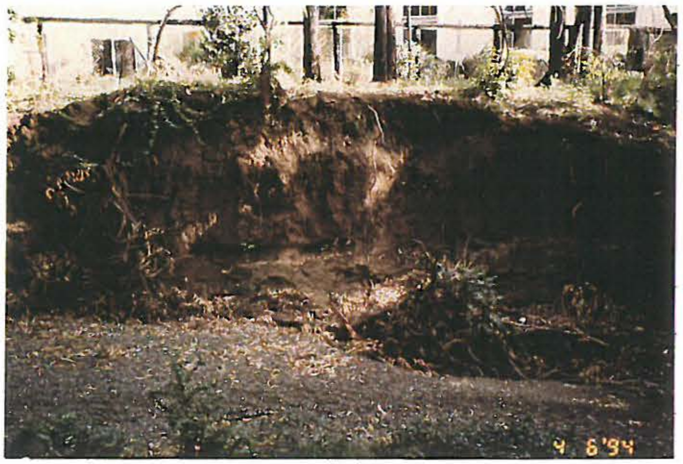
Creek Station	Reach	Description	Recommendation
319+00[2]	3	Channel bottom stabilizer destroyed.	Reconstruct stabilizer.
322+90[2]	3	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
323+00[1]	3	20′ vertical left bank, 25′ wide, roots exposed and overhanging bank, fence at top edge may be threatened, downstream end is the worst, Minnick residence.	Rock at toe, 6′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
331+00[1]	3	20′ vertical left bank, 40′ wide, exposed earth, trees close to top edge, outside of bend, Yau-Shah residence.	Rock at toe, 6′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
333+40[1]	3	25′ vertical left bank, 85′ wide, exposed earth, trees close to top edge, outside of bend, Bruno residence.	Rock at toe, 8′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
334+60[2]	3	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
366+00[2]	4	Undercutting is occurring underneath and below at downstream side of stabilizer, 1.5′-2′ deep plunge pool, Baer residence.	Stabilize with rock or rebuild stabilizer.
372+00	4	10′ vertical left bank, 50′ wide, outside of bend, exposed earth with roots at top, SCVWD easement at Harway and Greer residences.	Geocell, 10′ up bank, no cut into existing bank.
388+70[1]	5	12′ vertical left bank, 50′ wide, outside edge of bend, incised exposed earth below hanging vegetation, downstream of SCSP on right bank which is being undercut and failing 1 sack at a time at downstream end, Van Horne residence.	Sacked Concrete Slope Protection, 12′ up bank.
464+00[1]	8	6′ vertical left bank, 30′ wide, exposed earth with roots, outside of bend, at a knuckle which could form a new channel path, fence at top edge, Doyle residence.	Rock at toe, 6′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
484+40[1]	8	30′ vertical right bank, 20′ wide, outside of bend, middle is more incised than top and toe, bank is very damp throughout its height, tree at top edge with roots overhanging bank, SCVWD easement at Jesuit Retreat House.	Rock at toe, 6′ up bank, no cut into existing bank, soil placed between rock riprap with joint planting.

TABLE 6.1
Proposed Erosion Repair and Vortex Rock Weir Sites
Adobe Creek Watershed Planning Study
(continued)

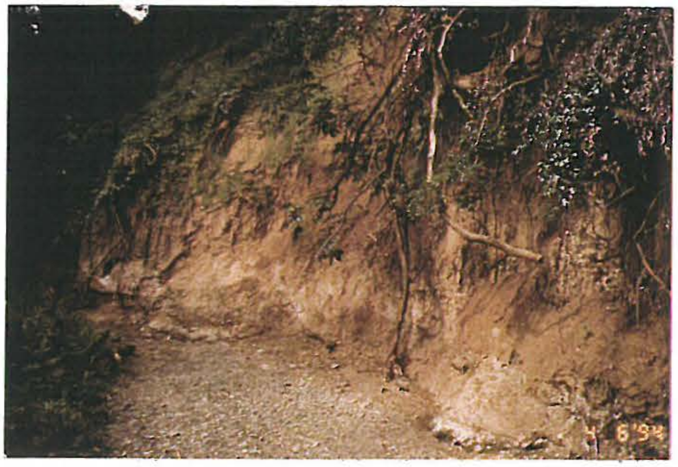
Creek Station	Reach	Description	Recommendation
553+50[2]	12	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
553+80[1]	12	10′ vertical banks, 60′ wide, upstream of old creek alignment, soil is soft and highly erosive, right bank at upstream end is eroded 6′ from where bank used to be, fence post hanging in the channel, Gurtner residence.	Geocell, 10′ up both banks.
555+00[2]	12	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.

[1] Erosion Repair Site
[2] Vortex Rock Weir Site

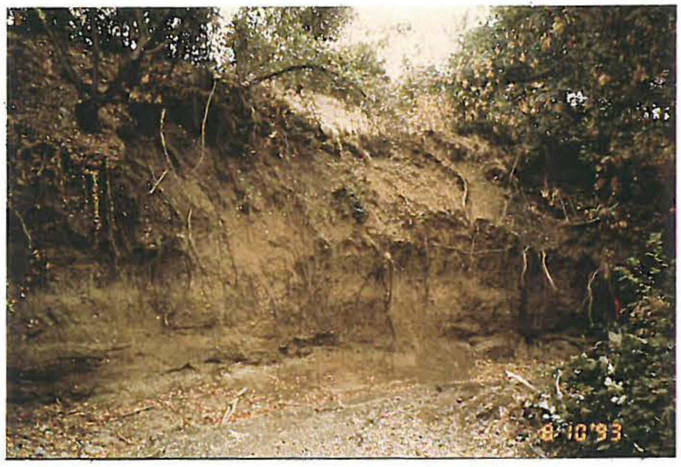
FIGURE 6.1
Photographs of Typical Erosion Sites



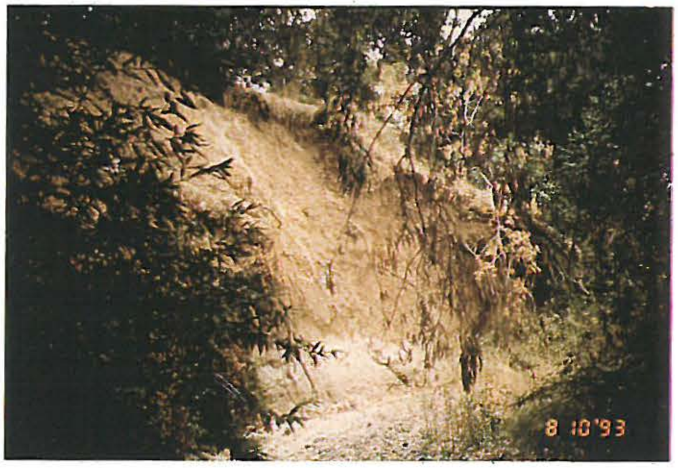
Erosion Site 255+00 (S3734-21)



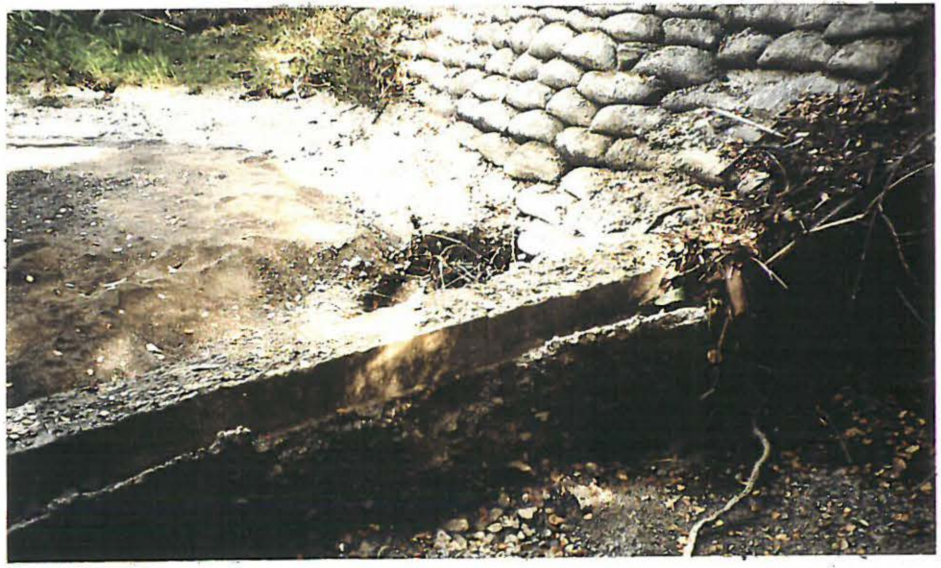
Erosion Site 311+30 (S3734-40)



Erosion Site 304+00 (S3627-14)



Erosion Site 311+30 (S3627-8)



Eroding Channel Bottom Stabilizer Upstream Yerba Buena Avenue (S3734-34)

CHAPTER 7
DESCRIPTION OF THE RECOMMENDED PROJECT

This chapter presents a detailed reach by reach description of the recommended capital improvement project and proposed maintenance program. An overview of the reach locations is shown on Figure 3.13 and Sheet 2 of the plan and profile plates located at the end of this report. Descriptions of each reach, the adjacent land uses, available right of way, project measures, construction procedures, impacts, and mitigation are included in this section. The recommended measures provide the best combination to provide solutions to the flood control, erosion, sedimentation, and water quality problems in each reach of the creek.

The recommended project includes:

- A culvert replacement at El Camino Real.
- Maintenance ramp upgrades for ramps at Alta Mesa Cemetery and downstream of Raquel Court.
- An additional culvert at Foothill Expressway.
- A channel modification for 800 feet downstream of West Edith Avenue consisting of an excavated gabion/rock riprap low-flow channel along the existing creek alignment with a two-stage parallel high-flow flood bench.
- Culvert replacements at Burke Road and O'Keefe Lane.
- A channel modification from the Foothill College Entrance Road to El Monte Road that consists of an excavated gabion/rock riprap lined low-flow channel with vegetated high-flow benches on both sides above the gabions.
- An improvement to the entrance structure of the Adobe Creek bypass (upstream of Tepa Way).
- Seventeen erosion sites will be repaired and vortex rock weirs will be installed at eight locations upstream of El Camino Real. (The sites are described in this chapter and shown on the plan and profile sheets at the end of the report.)
- Where possible, recommendations from the Adobe Creek Restoration Plan have been incorporated into the proposed project. These will be noted in the description of proposed measures in each reach.
- A measure to obtain a continuous maintenance easement along both banks by pursuing a long-term acquisition program and the implementation of a new maintenance program. The new maintenance program is described in the Maintenance Program Chapter and the Real Estate Program is described in detail in Appendix G.
- Culvert replacements at Yerba Buena Avenue and Tepa Way. These measures are not included in the scheduled construction, but the District would participate as a cost-shared partner (see Appendix K), if the bridge is replaced by another party for traffic or structural reasons.
- Planting and monitoring of hundreds of trees and shrubs. The revegetation program is designed to reestablish the plant and wildlife habitat disturbed by construction, to soften the visual impacts

of the proposed channel modifications and to restore elements of the riparian environment. The revegetation program is described in detail in the attached EIR.

The measures recommended for each reach of Adobe Creek are described in detail on the following pages and shown on the plan and profile sheets located at the end of this report. Each discussion includes a map of the individual reach and typical sections that depict the proposed measures.

STORMWATER IMPACTS AND MITIGATION DURING CONSTRUCTION

Any construction in the creek channel will result in potential impacts to water and air quality during the construction period. The potential impacts caused by the operation of construction equipment on and off site; contact of construction materials, equipment, and vehicles with stormwater; equipment storage, cleaning, and maintenance areas; on-site storage and disposal of construction materials; the nature of fill material; and erosion.

To mitigate for these potential impacts, the California construction best management practices (BMP) (Stormwater Quality Task Force, March 1993) would be implemented during all construction activities. The following are some of the BMPs pertinent to this project.

BMP for Scheduling

The BMP for scheduling includes the following guidelines:

- Major grading operations would be scheduled during dry months.
- Sufficient time would be provided before rainfall begins to stabilize the soil with vegetation.
- The site would be stabilized year round from erosion and sediment build up.
- Only portions of the site would be disturbed at any one time, and grading would be completed immediately. Disturbed portions of the site would be stabilized prior to grading the next portions.
- As the work progresses, cut and fill slopes would be revegetated wherever feasible and appropriate.
- Trenching would be scheduled so that most open portions of the trench are filled before new trenching is begun.

BMP for Temporary Stream Crossings

The BMP for temporary stream crossings includes the following guidelines:

- Use of temporary stream crossings would not be allowed for general public traffic.
- Design of the crossings would be performed by a California registered engineer.

- The crossings would be sized and installed according to the drainage design criteria of the local municipality. Design criteria would be based on standard engineering practices with provisions for minimizing impacts on disturbed crossing areas.

- During summer construction where the stream is constantly dry, a ford is sufficient for temporary access. However, where the stream flows continuously throughout the year or where there are frequent rains, temporary culverts or bridges would be more appropriate. Where used, these culverts and bridges would be sized to pass a significant design storm.

- The temporary stream crossings would be protected against erosion, both to prevent excessive sedimentation in the stream and to prevent washout of the crossing.

- The stream crossing would be inspected weekly and after each significant rainfall. Silt would periodically be removed from crossings. Aggregate lost from inlets and outlets of culverts would be replaced.

- Construction of temporary stream crossings would be at or near the natural elevation of the streambed to prevent any potential flooding upstream of the crossing.

BMP for Preserving Existing Vegetation

The BMP for preserving existing vegetation at the site includes the following guidelines:

- Existing vegetation to be preserved would be flagged.

- The root system of trees to be preserved would be staked off prior to construction.

- The limits of grading or disturbance would be clearly marked at all times.

- Construction traffic routes and spoil piles will not be located where adverse impacts to the existing vegetation may occur.

BMP for Dust Control

The BMP for minimizing dust occurrence at the site includes the following guidelines:

- Key access points would be identified and stabilized prior to commencement of construction.

- Where possible, construction traffic would be directed to stabilized roadways within the project.

- Watering of dust prone areas would be frequent, but not excessive, to minimize the impact of dust particles.

- The number and activity of vehicles on a site at any given time would be controlled.

- Haul trucks transporting materials would be provided with covers.

- Sediment deposited on paved roads would be rapidly cleaned up.

BMP for Construction Road Stabilization

The BMP for stabilizing construction roads include the following guidelines:

- Temporary access roads would be stabilized immediately after grading and maintained to prevent erosion and control dust.
- Gravel would be used for temporary roadways during rainy seasons and/or on slopes greater than 5 percent.
- The roadways would be carefully graded to drain transversely.

BMP for Stabilized Construction Entrance

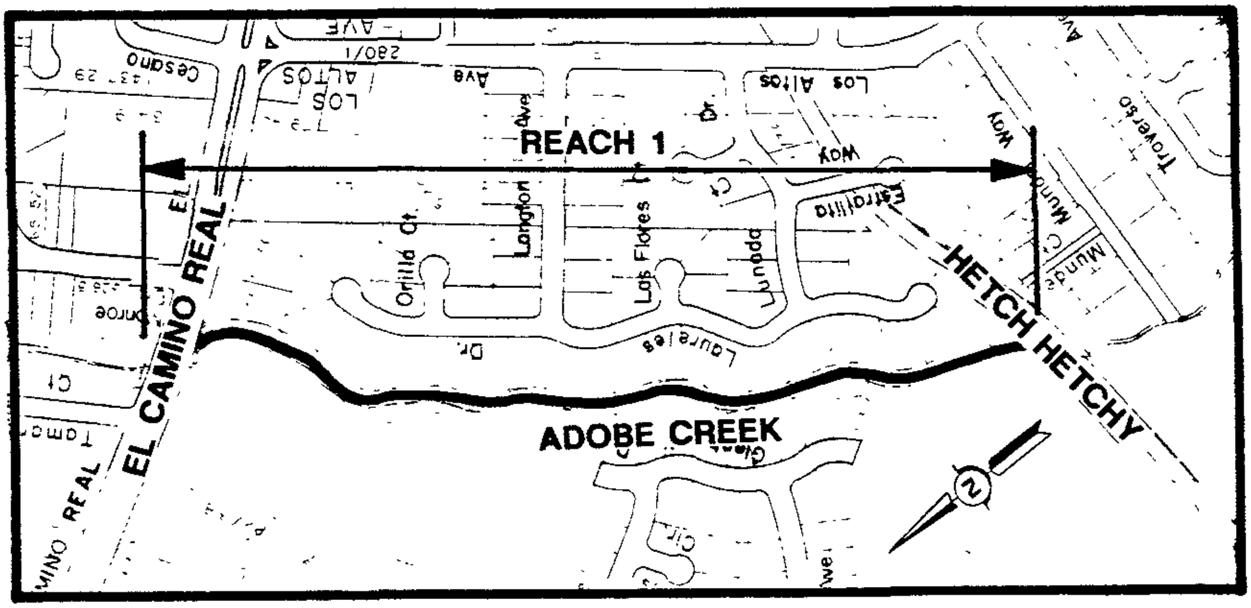
The BMP for stabilizing temporary access roads include the following guidelines:

- Access roads would be constructed on level ground where possible.
- The minimum depth of rock would be as recommended by a civil engineer.
- The minimum turning radii for entrance or exit to and from the temporary access road would follow the District's maintenance guidelines as set forth in Ordinance 83-2 (Appendix J).

BMP for Temporary Drains and Swales

The BMP for temporary drains ans swales include the following guidelines:

- Temporary drainage swales would be sized using local drainage design criteria. They would be designed so as not to adversely impact upstream of downstream properties.
- At a minimum, the drain/swale would conform to predevelopment drainage patterns and capacities.
- The drain/swale would be constructed with an uninterrupted, positive grade to a stabilized outlet.
- Energy dissipation measures will be provided if the flow out of the drain/swale can reach an erosive velocity.
- The drain/swale would be inspected weekly and after each rain for erosion or sediment build up.
- If there is a possibility for significant erosion to occur, the drainage swale would be stabilized using vegetation, chemical treatment, rock riprap, matting, or other physical means of stabilization.



REACH 1: EL CAMINO REAL TO HETCH HETCHY PIPELINE

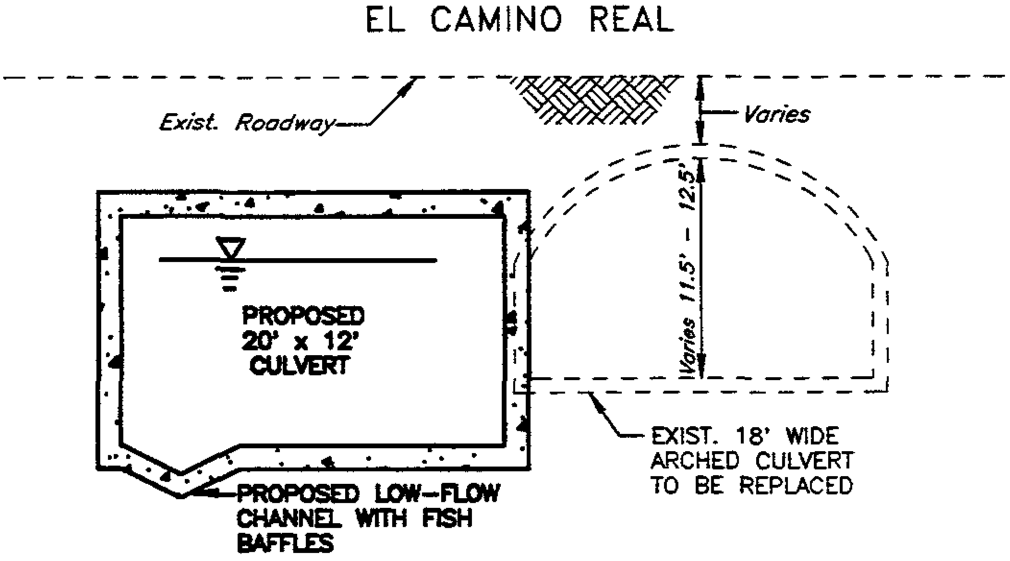
Reach 1 extends from downstream of El Camino Real to the crossing of the Hetch Hetchy Pipeline for a total length of 2,860 feet. Excluding a 104-foot length of trapezoidal concrete lining upstream of El Camino Real, this reach is primarily natural. Channel slopes are heavily vegetated with mature trees growing on the creek slopes to create a canopied channel, while the creek bottom is relatively void of major plant growth. A few locations display signs of erosion problems and there are several areas where rock and SCSP have been used to protect the bank. Like most reaches of the study, Reach 1 lacks continuous right of way. Easements are sporadically located throughout the reach. Property along this reach is residential, with the exception of a park just downstream of the Hetch Hetchy Pipeline.

Proposed Measures

The proposed channel modifications consist of replacing the existing inadequate culvert under El Camino Real, and rebuilding the upstream transition to the culvert from the natural creek. The District will also perform erosion repairs and pursue a new maintenance program.

The proposed culvert will be 20 feet wide by 12 feet high. The existing upstream concrete transition will be replaced with gabions on the channel sides and rock riprap on the invert. The gabions will extend upstream to stabilize the existing maintenance ramp on the left bank. The proposed culvert will be a cooperative project with the City of Palo Alto to implement their "Palo Alto Gateway" plan. The details of this plan are still under development by the City of Palo Alto. The plan is illustrated in Figure 5.4.

Figure 7.1 shows a typical section of the proposed channel modification measure.


EL CAMINO REAL
Exist. Roadway
Varies
Varies 11.5' – 12.5'
PROPOSED 20' x 12' CULVERT
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES
EXIST. 18' WIDE ARCHED CULVERT TO BE REPLACED

EL CAMINO REAL CULVERT REPLACEMENT

Figure 7.1

TYPICAL SECTIONS
REACH 1 RECOMMENDED PROJECT
NTS

The proposed erosion control measures consist of the repair of four erosion sites and the installation of one vortex rock weir. Described below are the site conditions and proposed repair methods for each location. Each location is identified by station number. This station number corresponds to the midpoint of the erosion sites or the proposed location of the vortex rock weirs.

At Station 255+00 there is a 12 foot-high, vertical, right bank extending for approximately 50 feet along the creek. The bank face is devoid of vegetation, and some roots are exposed, mostly less than 1 inch in diameter. The toe of the slope is sparsely vegetated with a small patch of non-native groundcovers and some nut grass. The top of the bank is vegetated with sparse non-native groundcovers, and occasional small saplings including Mexican elderberry, California bay, California buckeye, coast live oak, and red willow. The proposed erosion control measure is the placement of rock at the toe of the slope. Rock will be placed 12 feet high, requiring that the existing bank be excavated back 6 feet. This would result in the removal of approximately 36 square feet of shrubs, primarily native. Soil will be placed in the spaces between the rocks and planted.

At Station 261+00 there is an 9 foot-high right bank that is vertical for 5 feet along the toe of 40 feet of the creek. A concrete reinforced outfall at the center has been undercut. The vertical bank is devoid of vegetation. The bank above the eroded area slopes back to a fence and is sparsely vegetated with poison oak, Himalayan blackberry, two small California bay seedlings and one small California buckeye. At each end are California buckeye with undercut and exposed roots. The proposed erosion control measure is to place rock at the toe of the eroded bank, realign the outfall, and protect the trees at both ends. Rock will be placed 4 feet high. No cutback into the existing bank will be required. Some minor removal of the slope vegetation might occur while realigning the outfall, but it is anticipated that the area would naturally revegetate. Soil will be placed in the spaces between the rocks and planted.

A vortex rock weir at Station 260+80 is proposed as part of this erosion site repair. This stabilization structure will help to protect the erosion repair by stabilizing the channel bottom in the vicinity of the site.

Station 261+60 there is a 16 foot, vertical, right bank approximately 90 feet in length. The vertical face is devoid of vegetation and roots are exposed. Large coast live oaks occur at the upstream and downstream ends of the site. Three coast live oaks and one black walnut occur along the edge of the bank in the central portion of the site. The top of the bank is also vegetated with occasional shrubs such as California bay, California buckeye, common snowberry, poison oak, and cotoneaster. The proposed erosion control measure is to place rock from the toe 6 feet up the bank. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted.

At Station 263+40 there is a 16 foot, vertical, right bank 40 feet in length. The vertical face of the bank is sparsely vegetated except for some overhanging poison oak and a small patch of non-native groundcovers at the toe. Above the eroded face, the bank is relatively level. Along the top of the bank are two large coast live oaks, one at the upstream portion of the site and one in the central portion of the site. The proposed erosion control measure is to place rock from the toe 6 feet up the bank. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted.

Maintenance would be performed as specified in the Maintenance Program chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. The is illustrated with a typical section on Figure 7.2.

Construction Procedures

General Procedures

Site Preparation

Prior to any construction activities, all project areas would be fenced and warning signs posted for public safety. Notification would be given to residents and businesses in the vicinity of the construction area. Alternate traffic and pedestrian routes for impacted areas would be posted. A survey of all structures and trees to be removed would be performed.

The contractor would utilize various measures to preserve and protect structures and trees which are shown on the project plans as not to be removed or disturbed. The contractor would submit to the District a detailed written description of the methods to be used to protect the existing trees and structures from damage during the duration of the construction. Typical methods include installing fences around the trees or attaching ribbons on the trees prior to any construction activities.

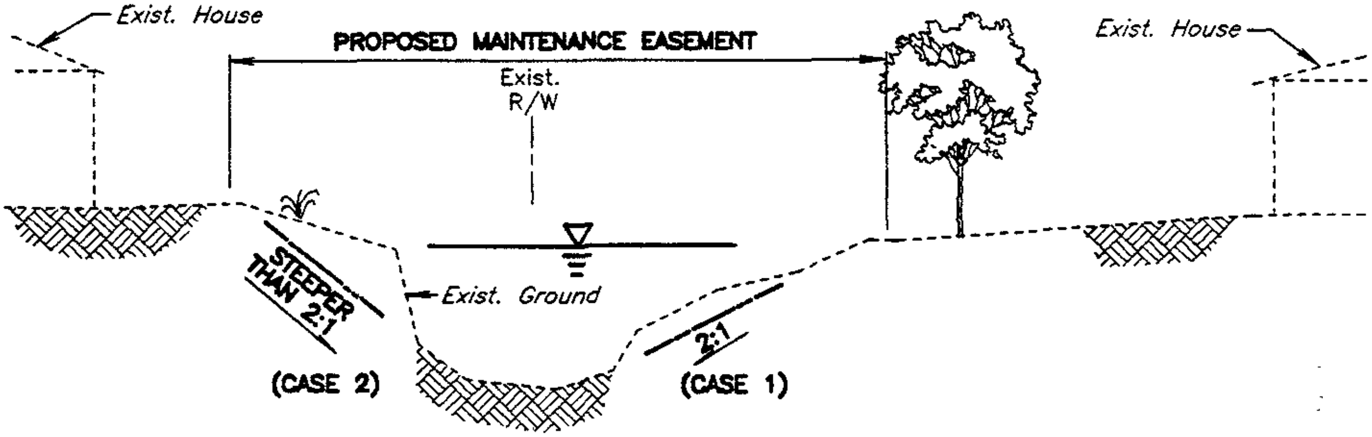
Excavation

Excavation would typically require loaders, graders, dump trucks or similar heavy equipment. Excess material from excavation would be hauled off site. The contractor would prepare an excavation safety plan for worker protection from hazards of caving ground during excavations. The construction contractor is responsible for the details of the design of shoring and sloping.

Areas in the channel bottom that are disturbed and compacted due to excavation activities would be scarified and restored.

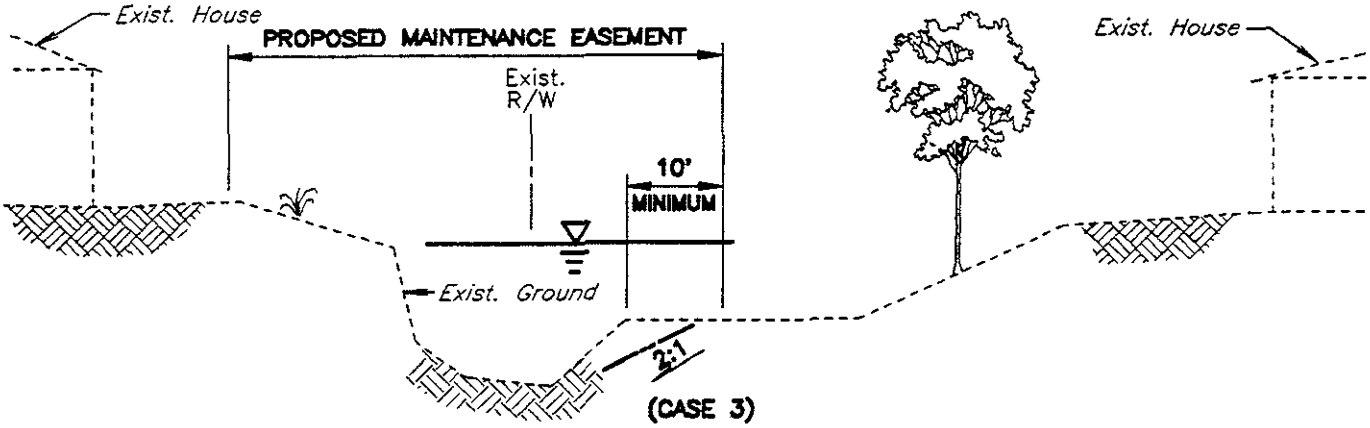
A majority of the excavation activity would be done during the summer and fall months to reduce the possibility of erosion. The contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) which would specify measures for preventing soil from eroding into the stream. All slopes with saturated sands and silts would be protected from slope failure until permanent slope protection is installed. Typical methods include netting covers to impede soil loss on steep slopes.

The contractor would provide for temporary drainage within the channel at all times. The contractor would also keep existing storm drainage systems in continuous operation during construction.



CASE: 1 PROPOSED RIGHT-OF-WAY LINES WILL BE SET AT A SLOPE EQUAL TO TWO HORIZONTAL UNITS FOR EVERY ONE VERTICAL UNIT FROM THE TOE OF THE CREEK BANK.

CASE: 2 FOR RESIDENTS WITH STRUCTURES CLOSE TO THE CREEK, PROPOSED RIGHT-OF-WAY WILL BE SET AT TOP OF EXISTING BANK.



CASE: 3 PROPOSED RIGHT-OF-WAY LINES WILL BE SET AT A SLOPE EQUAL TO TWO HORIZONTAL UNITS FOR EVERY ONE VERTICAL UNIT FROM THE TOE OF THE CREEK BANK OR A MINIMUM OF 10 FEET FROM TOP OF LOW BANK.

MAINTENANCE EASEMENT CORRIDOR

Figure 7.2

TYPICAL SECTIONS
REACHES 1 TO 16 RECOMMENDED PROJECT
NTS

The District would be responsible for inspecting, disposal, and storage of any excavated materials. Any potentially contaminated materials encountered during construction would be evaluated in the context of applicable local, state, and federal regulations and guidelines governing hazardous waste. All materials deemed to be hazardous would be disposed of following applicable agency regulation and guidelines.

If burials or archaeological artifacts are encountered, the project work would be suspended. No further disturbance of the site would be made until the County Coroner has visited the site. The contractor would comply with the local ordinance in regards to discovering any burial sites.

Shoring

The installation of the shoring system could potentially result in ground movement. Bulging or lateral movement of the shoring would allow the soil behind the wall to slump toward the wall, causing lateral movement of the soil and settlement of the ground. Both lateral and vertical ground movement would depend on the design and type of shoring system. The shoring system would be designed and installed by the Contractor to specifically control ground movement. This could include the installation of an adequately stiff wall and sufficient bracing. Monitoring of potential ground movement could also take place throughout the construction period in sensitive areas.

Pile Driving

Installation of driven piles for the shoring system would cause noise and vibrations in the surrounding ground. In loose to medium dense sandy soil, the vibrations tend to densify the soil and thus cause ground surface settlement. Any manmade sandy fill, such as backfill used for utility lines or swimming pools, may be susceptible to vibration induced settlement also.

The vibration intensity caused by pile driving depends on the type of pile driving equipment and the soil conditions on the site. Typical methods to reduce the impact include using a backhoe to drive sheet piles instead of a vibratory pile driver.

El Camino Real Culvert Construction

Prior to construction of the box culvert under El Camino Real, a shoring system would be installed. The shoring system could consist of sheet piles or soldier piles with lagging.

After the installation of the shoring system, the channel would be excavated and the existing box culvert removed. At this point, construction can proceed several different ways. If traditional methods are used, the box culvert bottom slab would be poured, followed by form work installation and pouring of the side walls and top slab. After completion of the culvert and removal of form work, backfill would be placed behind the culvert walls, and the roadway paved.

Construction of the box culvert under El Camino Real would typically proceed in two or more stages so as to maintain three lanes in each direction open for traffic. This would be accomplished by relocating the existing six lanes to the space occupied by three of the traffic lanes, the median, one sidewalk, and the parking lanes. This procedure would necessitate closure of the sidewalk on alternate sides during the construction. After one side of the culvert is completed, the same procedure would be followed for the other side.

The other methods of culvert construction that can be used either to reduce construction time or reduce traffic impacts are methods such as: precast concrete segments, bridging the entire construction site, or incentive construction contracts.

Prior to construction of the culvert, the existing gas, water, sewer, and phone utility lines that cross the creek would be relocated.

Reconstruction of the upstream transition structure would involve: removal of the existing concrete transition, excavation of the channel to widen the transition, installation of rock riprap on the invert, and placement of stepped gabions on the side slopes. As part of the reconstruction, the existing maintenance ramp will be regraded and ACB will be placed on the surface.

Water flowing in the creek during the culvert construction may be blocked and diverted around the construction area using coffer dams, pumps, and pipes.

No construction staging areas are available on the properties adjacent to the construction area. At the time of construction, the contractor will find a site in the immediate area that will meet construction needs. Access to the construction area would be from the existing maintenance ramp off of El Camino Real and from the Cabaña Hotel property.

Erosion Repair Sites

Construction of an erosion repair project is done in three stages.

The first stage is site preparation. This stage consists of the removal of any vegetation that cannot be saved, concrete rubble, rock, and any slope cutback or fill that is required. This work would be performed with a hydraulic excavator or backhoe (depending on the height of the bank).

The second stage is the placement of the slope protection material. In the case of rock riprap, it would be placed on the eroded slope approximately 3 feet deep at a 1½:1 slope. This would require dump trucks and loaders for delivery and a hydraulic excavator for placement.

The third stage is revegetation. In the case of rock, this would involve filling the voids between the rocks with soil, the placement of a biodegradable erosion mat on the bank surface, inserting pole cuttings into the soil voids, and seeding the surface with native groundcovers. The placement of the soil would necessitate the use of a hydraulic excavator.

Vortex Rock Weirs

Vortex rock weirs will be constructed in two stages.

The first stage is the site preparation. During this stage, the weir area would be cleared of vegetation, and enough of the bank and creekbed would be excavated to "key" in the rock when it is placed.

The second stage is the placement of the rock. During this stage, a loader would bring in the rock and a hydraulic excavator would place it. The portion of the weir that extends up the bank slope would be covered with soil and seeded with native groundcovers.

Impacts

Direct Impacts of Construction

Privacy and Security Impacts

The project would result in short-term privacy and security impacts on homes adjacent to the construction sites when fences and other property barriers are removed. Pets would also be affected by construction activities and could escape from backyards during fence removal.

Utility Relocation Impacts

Relocation of utilities would be coordinated with the appropriate utility company. All utility relocation would be performed by the appropriate utility company, unless otherwise directed by the company. Some of the power poles adjacent to the construction site may be relocated. Underground utilities such as gas and power lines would require relocation during channel and bridge construction. The relocation of utilities may result in short-term service interruptions to the surrounding areas.

Noise Impacts

Construction activities would result in temporary noise impacts to the surrounding sites. The following discusses possible noise impacts due to the project.

The use of diesel-powered heavy equipment, jackhammers, and gasoline-powered chain saws would result in relatively high noise levels adjacent to the project site. Pumps could be used to transport water around the construction area (these pumps could operate 24 hours a day). A list of the noise levels from typical construction equipment (at 25 feet) is listed in Table 7.1.

TABLE 7.1
Noise Levels from Construction Equipment

Equipment	Noise Levels at 25 Feet (Decibels)[1]
Backhoes	78 - 99
Loaders	78 - 90
Dump trucks	89 - 100
Concrete trucks	89 - 100
Cranes	82 - 93
Chain saws	90 - 100
Pavement breakers	82 - 92
Jackhammers	88 - 103
Pile drivers	100 - 110

[1] Noise levels change six decibels for every doubling of distance from the noise source. For example, a tool which produces noise of 95 decibels at 25 feet registers at about 101 decibels at 12½ feet, and about 89 decibels at 50 feet.

Much of the construction would take place along back property lines, within a few feet of adjacent residences. The noise resulting from construction in these areas would exceed local standards.

Traffic Impacts

Construction of the culverts under major roadways could affect traffic in the short term.

The access of construction vehicles onto the project site would result in traffic impacts on the streets used.

Water Quality Impacts

Oily or greasy substances, turbidity from sediment, or other materials harmful to fish, originating from the contractor's operation could enter the creek.

Air Quality Impacts

Construction activities would result in short term local air quality (dust and exhaust) impacts. Construction and demolition activities would also raise dust and track mud on the local streets.

Vegetation Impacts

The total vegetation impacts for the culvert construction, four erosion repair sites, and vortex rock weir site in this reach are 5,841 Square Feet (Sq. Ft.) (0.13 acres).

Mitigation

Privacy and Security Mitigation

The District would install temporary construction fencing to replace any backyard fences removed during construction. Permanent fences would be replaced in kind.

Utility Relocation Mitigation

Any damage to utilities would be repaired and/or replaced by the District or utility company.

Noise Mitigation

Construction activities would be conducted in accordance with all local noise ordinances.

All construction equipment with internal combustion engines would be equipped with noise shielding and muffling devices. All the equipment must be kept in good mechanical condition to minimize noise created by faulty or poorly maintained engines, drive trains and other components.

Scheduling of construction would be done to minimize the number of noise generating equipment in operation at any one time.

Traffic Mitigation

Any truck trips associated with project construction would avoid neighborhood streets, except where a local street may need to be traversed to access the site.

A traffic Detour plan would be implemented, as described in the **Construction Procedures** section, to minimize potential traffic impacts.

Water Quality Mitigation

The contractor will prepare a SWPPP which would identify measures to avoid increasing the turbidity of the creek. In addition, the contractor would have to comply with the requirements of the California Department of Fish and Game Section 1601 Streambed Alteration Agreement.

Project construction would only take place during periods of low creek flows.

Project construction would include the implementation of temporary erosion control measures.

Once construction is completed, the District would stabilize and/or revegetate the disturbed areas of the creek channel.

Air Quality Mitigation

Earthmoving and other dust-producing activities would be suspended during periods of high winds.

Equipment and manpower would be provided for watering of all exposed or disturbed soil surfaces at least twice daily.

Stockpiles of soil or other materials that can be blown by the wind would be watered or covered.

Paved construction areas and adjacent streets would be swept of all mud and debris, since this material can be pulverized and later resuspended by vehicle traffic.

Vegetation Mitigation

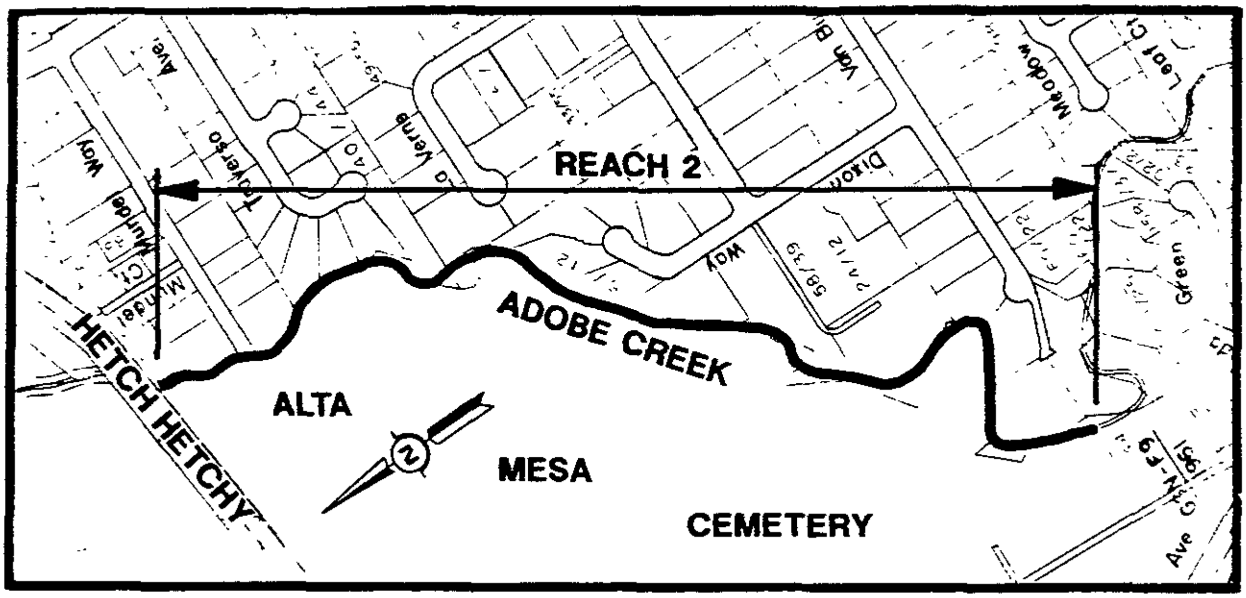
The total vegetation mitigation for the culvert construction, four erosion repair sites, and vortex rock weir site in this reach is 9,037 Sq. Ft. (0.21 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 1 is $1,902,000. A detailed cost estimate is included in Appendix F.



REACH 2: HETCH HETCHY PIPELINE TO UPSTREAM ALTA MESA CEMETERY

Reach 2 extends from the Hetch Hetchy Pipeline crossings to the upstream limit of the Alta Mesa Cemetery property, a total length of 3,470 feet. This is a very well-defined portion of the creek with steep, high, and well-vegetated banks. Large SCSP jobs line a number of the outside bends along this reach. Excluding the Alta Mesa Cemetery property, the entire reach is residential.

Proposed Measures

The proposed measures are erosion repairs and a new maintenance program.

The proposed erosion control measures consist of the repair of four erosion sites. Described below are the site conditions and proposed repair methods for each location. Each location is identified by station number. This station number corresponds to the midpoint of the erosion sites.

At Station 297+00 there is a 30-foot high left bank, 75 feet in length. The upper 8 feet is a nearly vertical bank for about 50 feet of its length. A fence at the top is beginning to slide down the bank. At the top of the bank are a California bay and a coast live oak with roots exposed on the vertical slope. The vertical slope is mostly bare with a small amount of periwinkle and ivy. The bank below the vertical portion is vegetated with a mixture of periwinkle, ivy, and some poison oak. The proposed erosion control measure is to place rock at the toe of the eroded bank. Rock would be placed from the toe 14 feet up the bank. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted.

At Station 304+00 there is a 25 foot, vertical, eroded area on the right bank, 40 feet in length. Little vegetation occurs on the bank, except for a small California buckeye and some poison oak and California blackberry. A California bay at the top of the eroded bank on the downstream end is undercut and roots are exposed. A coast live oak is located upslope about 1 foot from the edge of the eroded bank. At the top of the bank in the central portion of the site are a multi-stemmed Mexican elderberry and some poison oak. The proposed erosion control measure is the placement of SCSP on the eroded bank. SCSP is being proposed for this site because the existing bank is very steep and a building used by Alta Mesa Cemetery to store equipment and supplies is located at the top of the bank. The protection will be placed 12 feet high and the slope will not be laid back above this. Vegetation removal will include a small California buckeye and 64 square feet of shrubs.

At Station 307+40 there is a 22 foot vertical right bank, 75 feet in length. The vertical face is devoid of vegetation, but some roots are exposed. At the top edge of the bank are California buckeyes, a Mexican elderberry, and hollyleaf cherry. Further up the bank are 3 multi-stemmed California buckeyes and 8 coast live oaks. Poison oak, small coast live oaks, toyon, and ornamental shrubs are on the top of the bank. The proposed erosion control measure is to place rock at the toe of the eroded bank. Rock would be placed from the toe 11 feet up the bank. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted.

At Station 311+30 there is a 35-foot high vertical right bank, 70 feet in length. The eroded slope is devoid of vegetation, with roots exposed. At the top of the bank are coast live oaks, California buckeyes, poison oak, hollyleaf cherry shrubs, stonefruit, California bay, toyon, and other non-native groundcovers. About 12 feet from the upper edge is a small terrace vegetated with annual grasses. The proposed erosion control measure is to place rock at the toe of the eroded bank. Rock would be placed from the toe 12 feet up the bank. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted.

An upgrade to an existing privately owned maintenance ramp from the Alta Mesa Cemetery property on the right bank at Station 305+00 is proposed.

A maintenance ramp is proposed from the Alta Mesa Cemetery property on the right bank at creek Station 305+00.

Maintenance would be performed as specified in the Maintenance Program chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.

Construction Procedures

Ramp Improvement

This improvement would involve excavation of native soils along the ramp alignment and its replacement with compacted crushed rock.

The staging area and access for construction would be from the Alta Mesa Cemetery property.

Erosion Repair Sites

Construction of the rock riprap erosion repair sites would be done as described in Reach 1.

For the erosion site that requires SCSP, the site preparation would be similar to the rock riprap repair described in Reach 1. A minimum 3-foot deep concrete cutoff wall at the toe of the bank is required for SCSP. After the installation of this wall, the individual sacks are filled and placed in layers until the top of the bank is reached. No heavy equipment is required for the placement of the sacks; normally the sacks are filled from a concrete feed line pumped from the top of the bank. The SCSP does not provide any opportunity for revegetation.

Impacts

Direct Impacts of Construction

Because of the limited amount of work to be done and the short duration of construction, the impacts due to construction would be minimal. There would be short duration site preparation, excavation, and equipment noise impacts.

Vegetation Impacts

The total vegetation impacts for the four erosion repair sites in this reach is 4,599 Sq. Ft. (0.11 acres).

Mitigation

Vegetation Mitigation

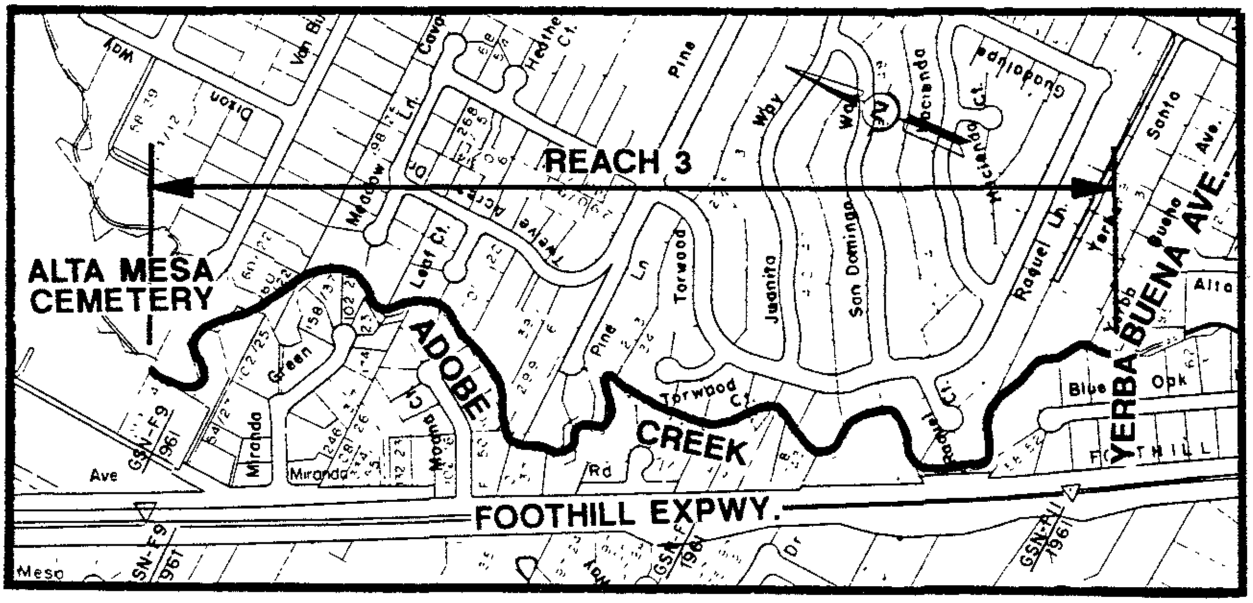
The total vegetation mitigation for the four erosion repair sites in this reach is 6,220 Sq. Ft. (0.14 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 2 is $204,000. A detailed cost estimate is included in Appendix F.



REACH 3: UPSTREAM ALTA MESA CEMETERY TO YERBA BUENA AVENUE

Reach 3 extends from the upstream property limits of the Alta Mesa Cemetery to downstream of Yerba Buena Avenue, a total distance of 5,315 feet. The land use in this reach is residential with homes constructed along the top of the bank, with many encroaching upon the creek. The creek is well under 1 percent capacity in many places with very erosive velocities throughout the reach. Consequently, a large portion of the creek through this reach is armored with SCSP or gunite. One erosion job has been done with geocell cellular confinement system. Geocell is defined in Appendix A, List of Technical Terms and Acronyms. District easements are located throughout this reach with a 1½± acre parcel off of Foothill Expressway that is owned in fee title by the District.

Proposed Measures

The proposed measures are to perform erosion repairs and pursue a new maintenance program.

The proposed erosion control measures consist of the repair of four erosion sites and the installation of four vortex rock weirs. Described below are the site conditions and proposed repair methods for each location. Each location is identified by station number. This station number corresponds to the midpoint of the erosion sites or the proposed location of the vortex rock weirs.

At Station 315+00 the proposed measure is the construction of a vortex rock weir. This will stabilize the creek bottom and limit channel bottom erosion in the vicinity of the weir.

At Station 316+00 there is a 12-foot high right bank that is vertical for 6 to7 feet along the toe of 25 feet of the creek. The exposed slope has very little vegetation, and some roots are exposed. A coast live oak is on the edge of the bank with roots exposed. A mixture of ivy, French broom, annual grasses, and eucalyptus seedlings are also on the sloping bank above the vertical slope. Further upslope, near the top of the bank, are 3 large coast live oaks. The proposed erosion control measure is the placement of gabions to a maximum height of 7½ feet. Gabions are being proposed for this site because the bank is vertical and there is a house at the top of the slope. The slope behind the gabions will not be laid back. This would result in the removal of the coast live oak. The total area of riparian vegetation impacted would be 225 square feet.

At Station 319+00 the proposed measure is the replacement of an existing channel bottom stabilizer with a vortex rock weir. The existing stabilizer has become eroded and is not functioning as designed.

At Station 322+90 there is a 20 foot, vertical portion of the left bank, 25 feet in length. The erosion almost extends to a fence at the top of the slope. The vertical slope is denuded, and many roots are exposed. At the edge of the eroding bank are a Mexican elderberry and a California buckeye. Three coast live oaks are upslope at the downstream end of the site. Understory on the slope above the eroding bank includes California buckeye seedlings, ivy and other non-native groundcovers. The proposed erosion control measure is the placement of rock at the toe of the eroded bank. Rock will be placed to a height of 6 feet. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted. A vortex rock weir is proposed as part of this erosion site repair. This stabilization structure will help to protect the erosion repair by stabilizing the channel bottom in the vicinity of the site.

At Station 331+00 there is a 20 foot-high, vertical, left bank, 40 feet in length. Most of the vertical bank is devoid of vegetation. Along the upstream portion of the bank is a mixture of periwinkle, mugwort, and small acacias. Further downstream at the top of the eroding bank are a California bay and a coast live oak both with exposed roots. Also present are oak sprouts growing from a stump at the edge of the bank, locust, acacias and periwinkle. The proposed erosion control measure is to place rock along the toe of the eroding slope. Rock will be placed to a height of 6 feet. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted.

At Station 333+40 there is a 25 foot, vertical, left bank, 85 feet in length. The eroded vertical bank is mostly devoid of vegetation and roots are exposed. At the upstream end of the site about 8 feet above the toe are a coast live oak and a toyon. Two coast live oaks are located above the cut bank. Five California bays at the downstream end of the site are being undercut and their roots are exposed. The top of the bank also contains patches of poison oak and common snowberry. The proposed erosion control measure is to place rock along the toe of the eroding slope. Rock will be placed to a height of 8 feet. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted.

At Station 334+60 the proposed measure is the construction of a vortex rock weir. The existing slope protection in the vicinity of this location is being severely undercut. Installation of a vortex rock weir will limit channel bottom erosion in the vicinity of the weir.

An upgrade to an existing maintenance ramp from District property on the right bank downstream of Raquel Court is proposed.

Maintenance would be performed as specified in the Maintenance Program chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.

Construction Procedures

Ramp Improvement

This improvement would involve excavation of native soils along the ramp alignment and the replacement with compacted crushed rock.

The staging area for the construction would be on the District property next to the existing ramp. The construction access would be from Foothill Expressway.

Erosion Repair Sites

Construction of the rock riprap erosion repair sites would be done as described in Reach 1.

In the case of gabions the site preparation would be similar to the site preparation required for rock riprap (described in Reach 1). A separate cutoff wall at the toe of the bank is required for gabions. After the installation of the cutoff wall, the gabion wire baskets are placed by hand, and a hydraulic excavator with a shaping blade is used to fill the gabion baskets with a rock and soil mix. Gabions are constructed in layers, from the toe of the bank to the top.

Revegetation in gabions would consist of placing soil on the surface of the gabions and vibrating the soil into the remaining voids between the rocks. At this point, pole cuttings would be inserted into the voids and the surface would be seeded with native groundcovers. The placement of the soil would necessitate the use of a hydraulic excavator. Soil will not be left on the surface of the gabions. Soil on the surface of gabions has been identified as a source of extra sediment during high creek flows.

Vortex Rock Weirs

Vortex rock weirs will be constructed as described in Reach 1.

Impacts

Direct Impacts of Construction

Because of the limited amount of work to be done and the short duration of construction, the impacts due to construction would be minimal. There would be short duration site preparation, excavation, and equipment noise impacts.

Vegetation Impacts

The total vegetation impacts for the four erosion repair sites and four vortex rock weir sites in this reach are 2,105 Sq. Ft. (0.05 acres).

Mitigation

Vegetation Mitigation

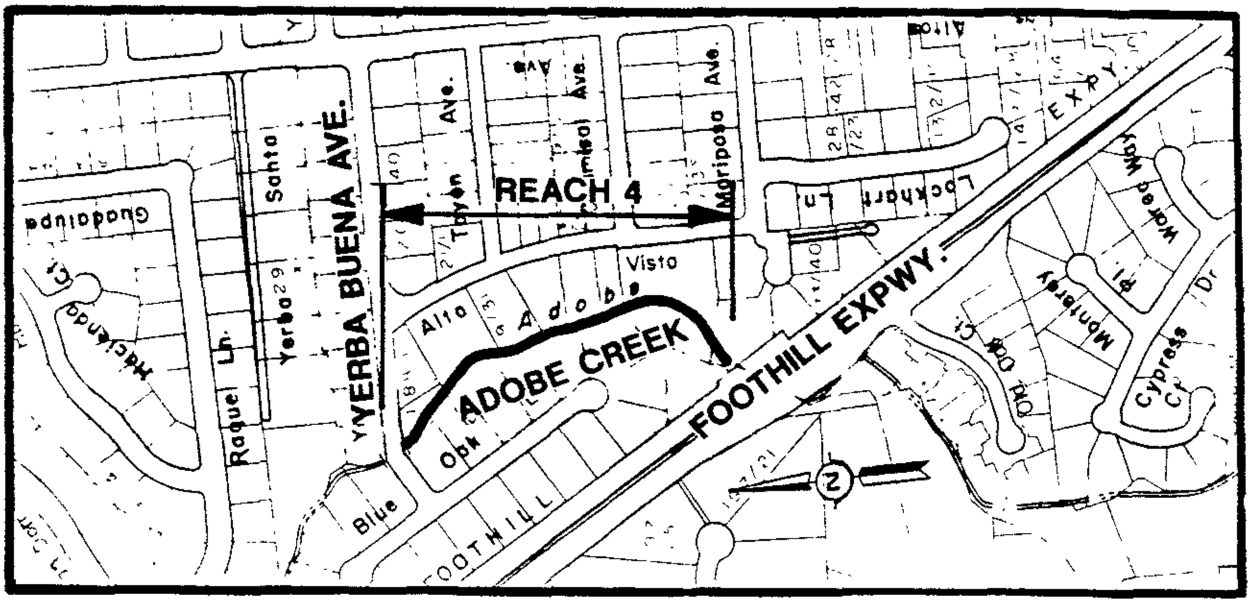
The total vegetation mitigation for the four erosion repair sites and four vortex rock weir sites in this reach are 2,605 Sq. Ft. (0.06 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 3 is $138,000. A detailed cost estimate is included in Appendix F.



REACH 4: YERBA BUENA AVENUE TO FOOTHILL EXPRESSWAY

Reach 4 is relatively short, extending from downstream of Yerba Buena Avenue to downstream of Foothill Expressway for a total length of 1,165 feet. Similar to Reach 3, the land use in this reach is residential with the creek severely encroached upon. The creek banks consist mainly of sacked concrete slope protection. Those areas not protected against erosion are subject to erosive velocities. The District does have a continuous flood control easement through most of this reach, acquired during the implementation of erosion protection construction. The easement is not uniform and ranges from 30 to 100 feet in width.

Proposed Measures

The proposed measures are to perform erosion repairs and pursue a new maintenance program.

The proposed erosion control measures consist of the repair of one erosion site and the installation of one vortex rock weir. Described below are the site conditions and proposed repair methods for each location. Each location is identified by station number. This station number corresponds to the midpoint of the erosion site.

At Station 366+00 an existing channel bottom stabilizer is being undercut, forming a pool 1½-2 feet deep across the 11 foot width of the channel. Above the existing stabilizer, both banks are covered with SCSP. The proposed erosion control measure is to replace the existing channel bottom stabilizer with a vortex rock weir. No impacts to vegetation are anticipated.

At Station 372+00 there is a 10 foot vertical left bank, 50 feet in length, eroded almost to a backyard fence. The vertical slope is mostly bare with some overhanging roots. Along the top of the bank are a coast live oak, a California buckeye, Mexican elderberry, and ornamental shrubs. At the downstream end, a California buckeye has been undercut leaving roots exposed. Some Himalayan blackberry mixed with ivy occurs on the downstream bank. Dense Himalayan blackberry occurs on the upstream end. Behind the fence is a coast live oak. The proposed erosion control measure is the placement of geocell. The geocell will be placed to 10 feet high with no further excavation of the slope necessary beyond what is required to place the geocell. Geocell was selected for this site due to the restricted width of the site. The coast live oak and 75 square feet of shrubs would be removed. The total riparian vegetation area impacted would be 150 square feet

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.

Deferred Measures

The deferred measure for this reach consists of replacing the inadequate bridge at Yerba Buena Avenue.

The replacement would consist of a double 12-foot by 10-foot box culvert on the same alignment as the existing bridge. The upstream and downstream transition structures would also be reconstructed.

This measure is included in the proposed project but is not in the scheduled construction. The District would participate as a cost-shared partner (see Appendix K) if the bridge is replaced by another party, such as a city, for traffic or structural reasons.

Construction Procedures

Erosion Repair Site

For geocell the site preparation would be similar to the site preparation required for rock riprap (described in Reach 1). In addition, a separate cutoff wall at the toe of the bank is required for geocell. After the placement of the cutoff wall, the geocell plastic cells are stretched out by hand onto a special grid pattern, put in place, then filled by a hydraulic excavator with a shaping blade. The soil is locked in place with a combination of the excavator scraping the top surface of the geocell and vibratory compaction. Geocell is constructed in layers, from the toe of the bank to the top.

Revegetation of geocell does not require the use of heavy equipment because the individual cells have an open soil surface after construction. Seeding and the installation of pole cuttings can be done by hand immediately after installation.

Vortex Rock Weir

The vortex rock weir will be constructed as described in Reach 1.

Impacts

Direct Impacts of Construction

Because of the limited amount of work to be done and the short duration of construction, the impacts due to construction would be minimal. There would be short duration site preparation, excavation, and equipment noise impacts.

Vegetation Impacts

The total vegetation impacts for the erosion repair site and vortex rock weir site in this reach are 556 Sq. Ft. (0.01 acres).

Mitigation

Vegetation Mitigation

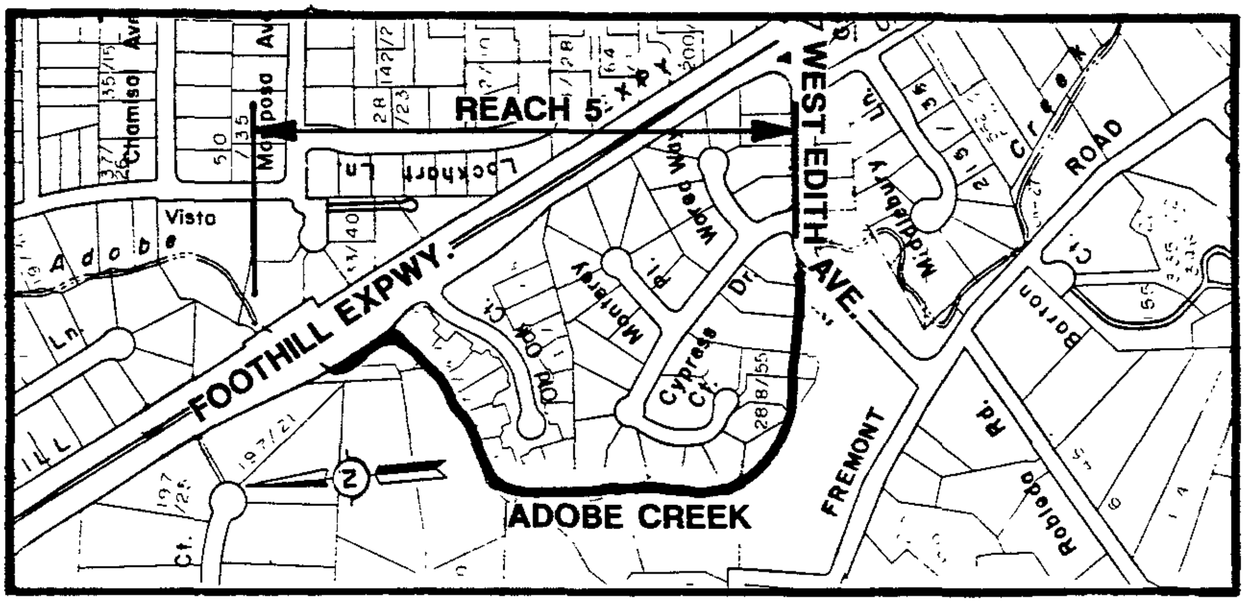
The total vegetation mitigation for the erosion repair site and vortex rock weir site in this reach are 612 Sq. Ft. (0.01 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 4 of $48,000. A detailed cost estimate is included in Appendix F.



REACH 5: FOOTHILL EXPRESSWAY TO WEST EDITH AVENUE

Reach 5 extends from downstream of Foothill Expressway to downstream of West Edith Avenue for a total length of 2,270 feet. The creek is conveyed under Foothill Expressway by a 12-foot by 10-foot reinforced concrete box culvert. This culvert is inadequate to convey the 1 percent flow rate. This, combined with the large embankment of the Foothill Expressway, results in a backwater and flooding upstream.

In the upper reach, there are a number of severe erosion problems. The creek channel slope is very steep and wooden and concrete walls, SCSP, and gunite have been used to protect against the very erosive velocities. The walls were first constructed to limit the size of the creek to utilize the maximum amount of property. Consequently, portions of the reach are well below 1 percent capacity. In several places, the wooden walls have rotted and collapsed, leaving near vertical earthen banks exposed to erosive flows and large trees perched within a few feet of the top of the bank.

The land use in this reach is residential, with several homes on the Los Altos side of the creek built extremely close to the creek. Nonuniform easements exist on the Los Altos side of the creek, with few District easements within Los Altos Hills.

Proposed Measures

The proposed channel modification measures consist of adding an additional box culvert under Foothill Expressway, and constructing a three-stage channel consisting of: a gabion-lined low-flow channel, a 10-foot wide mid-bank bench, and a high-flow flood bench for 900 feet downstream of West Edith Avenue. In addition, the District will perform an erosion repair and pursue a new maintenance program.

The proposed box culvert at Foothill Expressway will be 12 feet by 12 feet in size and will be located directly to the right of the existing culvert. In addition, the upstream and downstream transition structures will be rebuilt to conform to the new culvert configuration.

The proposed channel modification downstream of West Edith Avenue consists of a 10-foot bottom width low-flow excavated channel with gabions on the left channel side and rock riprap on the invert along the existing creek alignment; a10-foot wide vegetated mid-bank bench 3 feet above the low-flow channel; an excavated 48- to 64-foot wide high-flow bench to the right of and above the mid-bank bench; placement of a concrete slab under the West Edith Avenue bridge, and "fish passable" drop structures immediately downstream of West Edith Avenue and at the downstream end of the channel modifications. The downstream drop structure will replace an existing unstable drop structure. The last 200 feet of the channel modification consists of a 20 foot-wide gabion-lined channel.

As previously mentioned, construction of the channel modification downstream of West Edith Avenue is based on the dedication of a sufficient easement through the Town of Los Altos Hills.

Figures 46 and 47 show typical sections of the proposed channel modification measures.

The proposed erosion control measures consist of the repair of one erosion site. Described below are the site conditions and proposed repair methods. The location is identified by station number. This station number corresponds to the midpoint of the erosion site.

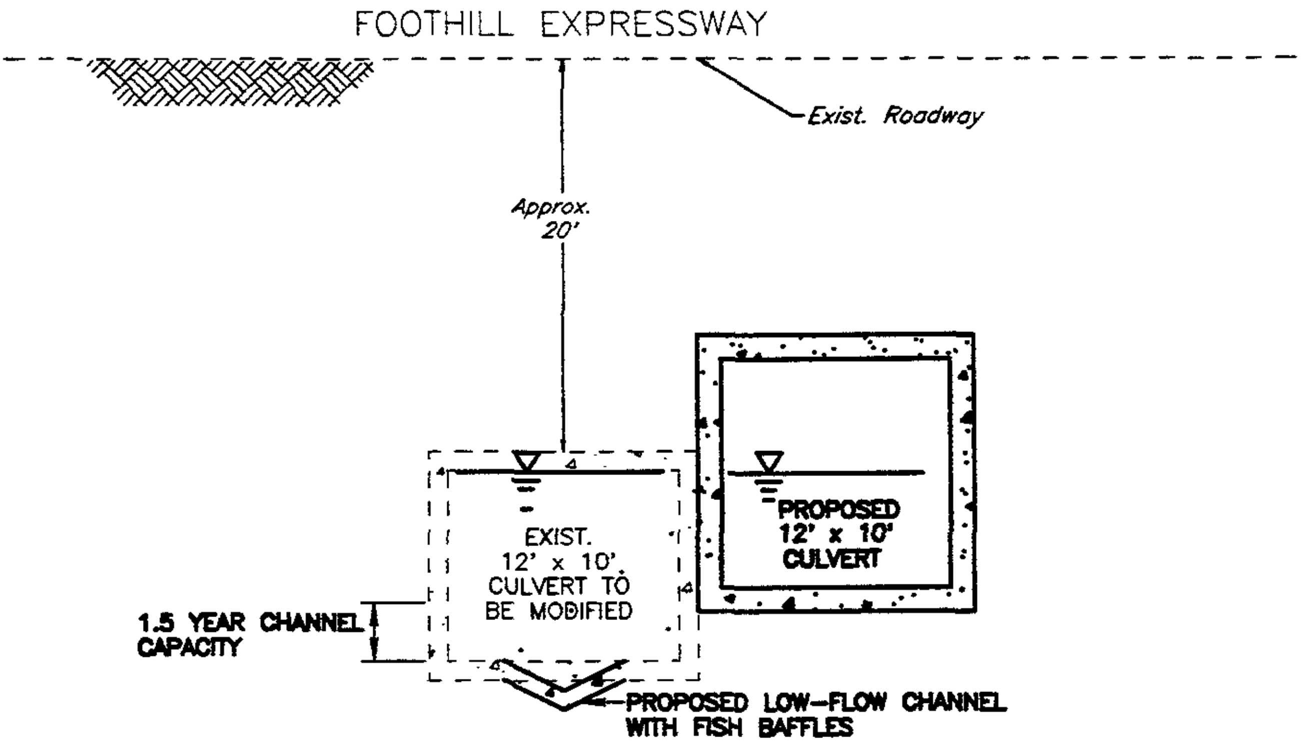
At Station 388+70 there is a 12 foot vertical left bank, 50 feet in length. It is located immediately downstream from some existing eroding SCSP. At the toe of the slope is dense Himalayan blackberry. California buckeye and Himalayan blackberry overhang the vertical slope. At the edge of the face are three California buckeyes, with some roots exposed. From 3 to10 feet from the edge of the bank are five multi-stemmed California buckeyes. Further upslope, 12 to 15 feet from the edge is a large pine, with ornamental shrubs behind it. The proposed erosion control measure is the placement of SCSP to a height of 12 feet. The placement of SCSP will minimize vegetation loss and conform to the existing bank protection upstream.

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.

Construction Procedures

Foothill Expressway

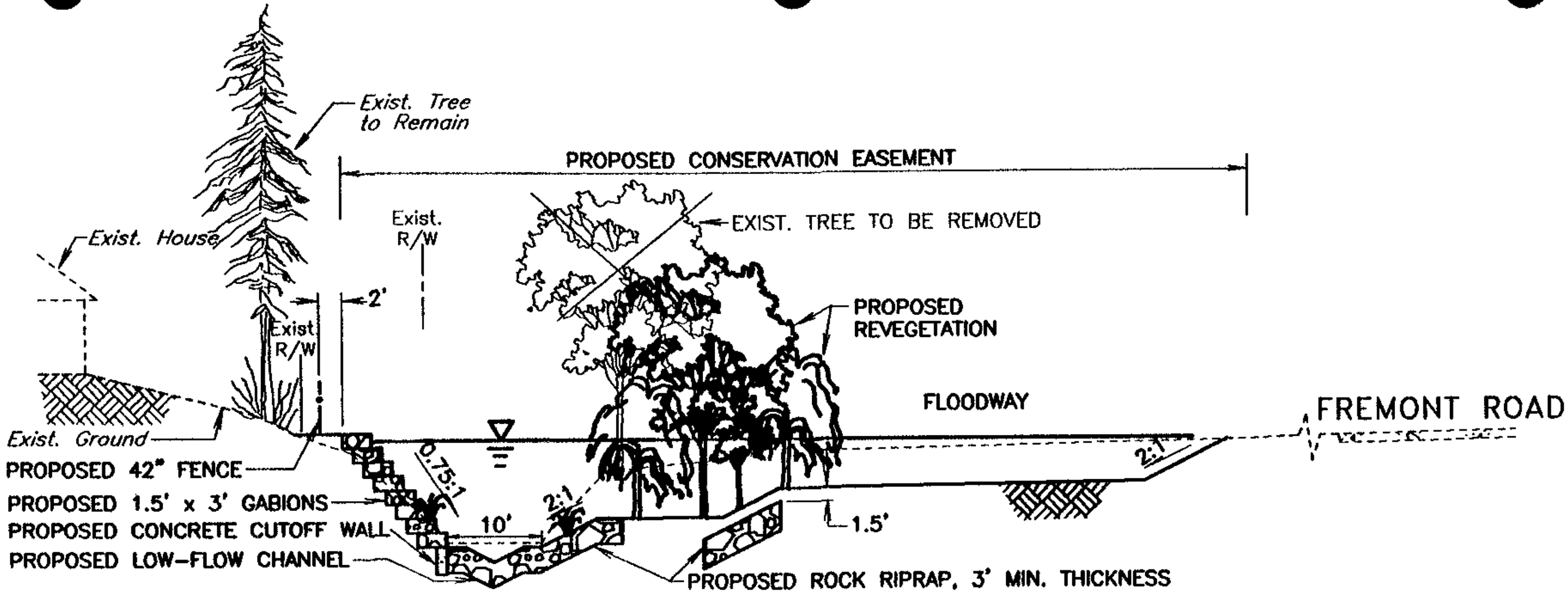
The reinforced concrete box culvert under Foothill Expressway would be constructed by boring and jacking adjacent to the existing culvert. Typically, the box culvert would be constructed on-site in sections and then jacked under the expressway by pushing and pulling on either side of the expressway. If the County Transportation Agency will allow a detour on the expressway, then conventional cut and cover construction could be used. This method would be similar to the procedures of the El Camino Real culvert construction in Reach 1 with the exception that the new culvert will be constructed next to the existing culvert.


FOOTHILL EXPRESSWAY
Exist. Roadway
Approx. 20'
EXIST. 12' x 10' CULVERT TO BE MODIFIED
PROPOSED 12' x 10' CULVERT
1.5 YEAR CHANNEL CAPACITY
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES

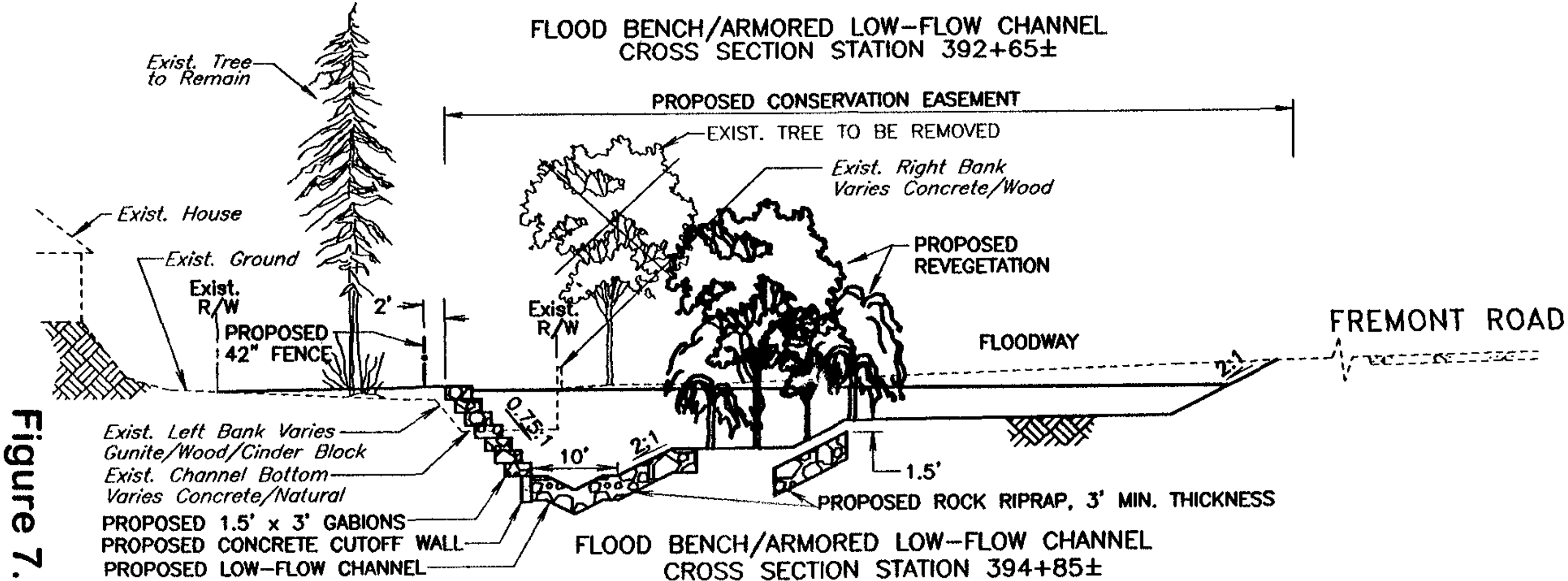
ADDITIONAL CULVERT
AT FOOTHILL EXPRESSWAY

Figure 7.3
TYPICAL SECTIONS
REACH 5 RECOMMENDED PROJECT
NTS

Figure 7.4


Exist. Tree to Remain
PROPOSED CONSERVATION EASEMENT
Exist. R/W
EXIST. TREE TO BE REMOVED
Exist. House
2'
Exist. R/W
PROPOSED REVEGETATION
FLOODWAY
FREMONT ROAD
Exist. Ground
PROPOSED 42" FENCE
0.75:1
2:1
2:1
PROPOSED 1.5' x 3' GABIONS
PROPOSED CONCRETE CUTOFF WALL
10'
1.5'
PROPOSED LOW-FLOW CHANNEL
PROPOSED ROCK RIPRAP, 3' MIN. THICKNESS

FLOOD BENCH/ARMORED LOW-FLOW CHANNEL
CROSS SECTION STATION 392+65±


Exist. Tree to Remain
PROPOSED CONSERVATION EASEMENT
EXIST. TREE TO BE REMOVED
Exist. Right Bank Varies Concrete/Wood
Exist. House
PROPOSED REVEGETATION
Exist. Ground
Exist. R/W
2'
Exist. R/W
FREMONT ROAD
PROPOSED 42" FENCE
FLOODWAY
2:1
0.75:1
Exist. Left Bank Varies Gunite/Wood/Cinder Block
Exist. Channel Bottom Varies Concrete/Natural
10'
2:1
1.5'
PROPOSED ROCK RIPRAP, 3' MIN. THICKNESS
PROPOSED 1.5' x 3' GABIONS
PROPOSED CONCRETE CUTOFF WALL
PROPOSED LOW-FLOW CHANNEL

FLOOD BENCH/ARMORED LOW-FLOW CHANNEL
CROSS SECTION STATION 394+85±

TYPICAL SECTIONS
REACH 5 RECOMMENDED PROJECT
NTS

Part of the culvert construction will be the reconstruction of the transition structures to the culverts. The existing transitions would be reconstructed to incorporate the additional width of the new culvert. A sloping splitter wall between the culverts would be constructed on the upstream side for floating debris control.

Water flowing in the creek during the culvert construction may be blocked and diverted around the construction area using pumps and pipes.

A possible staging area for construction would be the District property off of Foothill Expressway downstream of the culvert. Access to the construction area would be across a District easement from Old Oak Court or directly from Foothill Expressway.

West Edith Avenue

Construction of the channel modifications would include: removal of the existing concrete/wood creek channel downstream of West Edith Avenue, excavation of the high flow and mid-bank flood benches and low-flow channel (site has already been cleared of structures by developer), excavation for and placement of a concrete slab under the West Edith Avenue Bridge, construction of "fish passable" concrete drop structures at West Edith Avenue and at the downstream end of the modifications, placement of rock riprap on the bottom of the low flow channel, and stepped gabions on the side slopes. Incorporated into the right gabion side slope would be a maintenance access ramp surfaced with ACB.

Revegetation areas in this reach would be planted with riparian plant species as designated in the mitigation plan after all construction activities are completed. Typically this would be done in fall for the best survival rates.

Water flowing in the creek during the channel construction may be blocked and diverted around the construction area using pumps and pipes.

The possible staging area for construction would be on the project site where the high flow bench will be located and immediately upstream of West Edith Avenue in a Town of Los Altos Hills park. Access to the construction area would be from West Edith Avenue and Fremont Road.

Erosion Repair Sites

Construction of the SCSP erosion repair site would be done as described in Reach 2.

Impacts

Direct Impacts of Construction

All of the privacy and security, utility relocation, noise, traffic, water quality, and air quality impacts in this reach would be similar to the impacts discussed for Reach 1.

Vegetation Impacts

The total vegetation impacts for the culvert construction, erosion repair site, and channel modification in this reach are 23,404 Sq. Ft. (0.54 acres).

Mitigation

Construction Mitigation

All of the privacy and security, utility relocation, noise, traffic, water quality, and air quality mitigation in this reach would be similar to the mitigation discussed for Reach 1.

Vegetation Mitigation

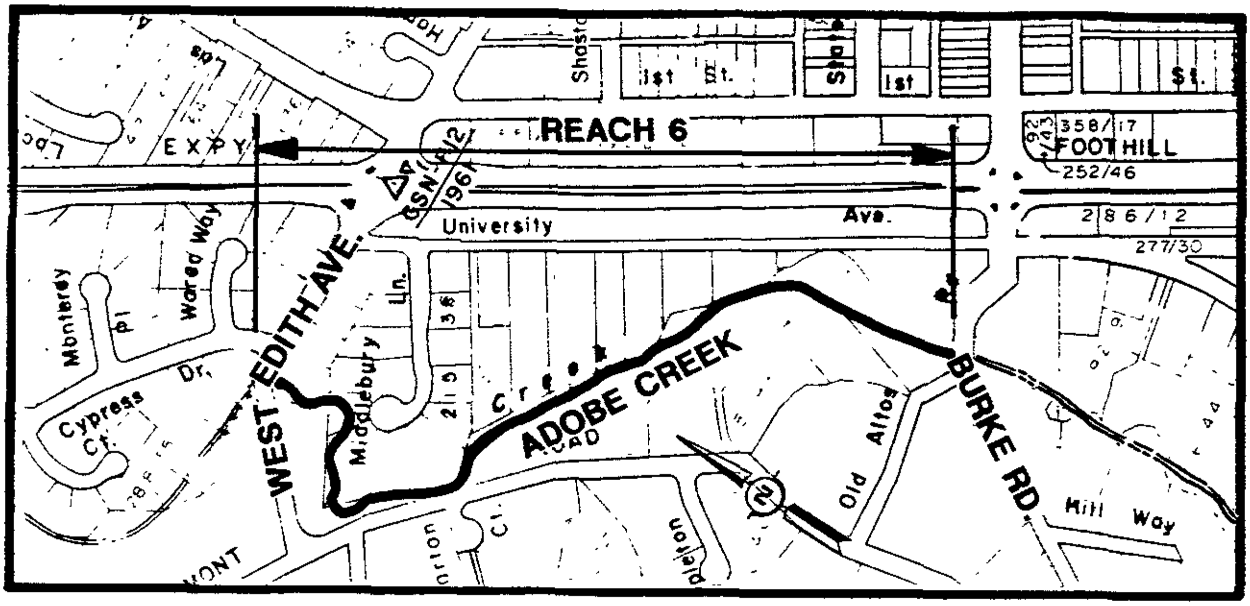
The total vegetation mitigation for the culvert construction, erosion repair site, and channel modification in this reach are 30,162 Sq. Ft. (0.69 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 5 is $2,641,000. A detailed cost estimate is included in Appendix F.



REACH 6: WEST EDITH AVENUE TO BURKE ROAD

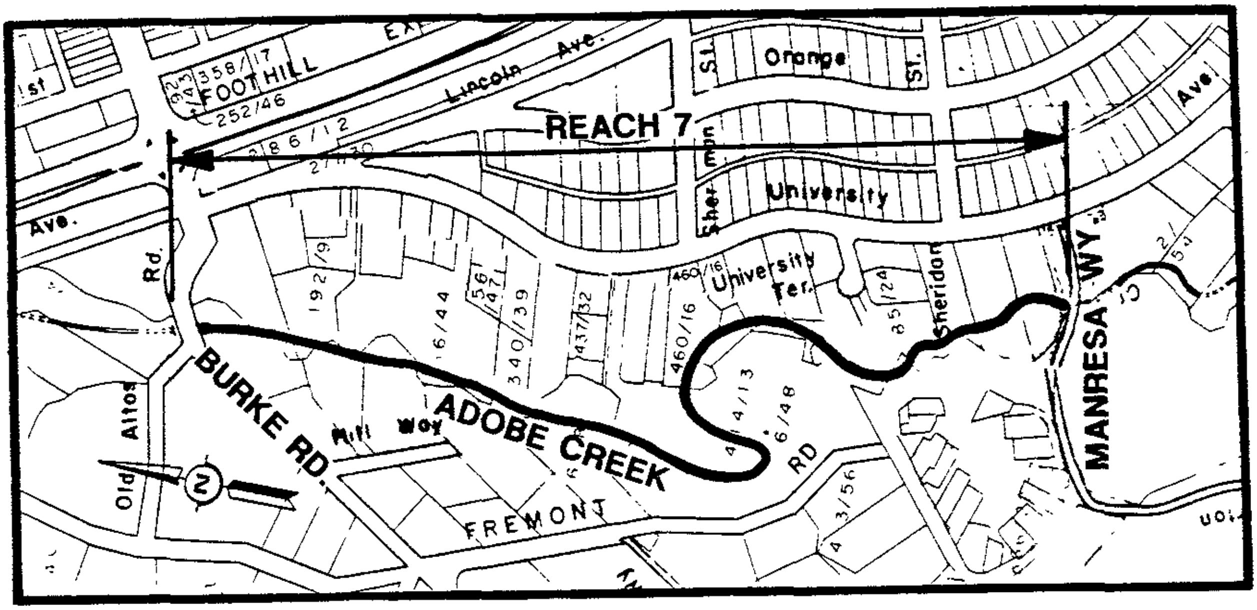
Reach 6 extends from downstream of West Edith Avenue to downstream of Burke Road for a total distance of 2,335 feet. Deposition of sediment occurs beneath the bridge at West Edith Avenue due to the extremely constricted channel immediately downstream of the bridge. This limits the capacity of the recently constructed (1985) bridge.

The creek through this reach is relatively small. The majority of the creek has banks of approximately 4 feet high and a channel width of 8 to 10 feet. The channel slope is fairly flat, thus there are few erosion problems. Rock mortar walls and SCSP have been used to protect those areas against erosion. The land use in this reach is residential and a number of homes encroach on the creek.

Proposed Measures

The proposed measure is to pursue a new maintenance program.

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.



REACH 7: BURKE ROAD TO MANRESA WAY

This reach extends from downstream of Burke Road to the downstream face of Manresa Way, a total length of 3,440 feet. The existing bridge at Burke Road is unable to contain the 1 percent flood flows.

This reach contains several distinct channel types. Immediately upstream of Burke Road, the creek banks are lined with SCSP. The SCSP transitions into wooden walls which, in turn, end at the downstream limits of Shoup Park. Through Shoup Park, the creek is mostly natural and is only 3 to 4 feet deep and 8 to 12 feet wide. Through the Redwood Grove Nature Preserve, the creek is less defined and consists of a combination of shallow braided channels running through the redwood trees. Farther upstream, the channel becomes more defined and gabions are used to protect the slopes just downstream of Manresa Way. A few homemade bank protection measures have been implemented along this reach with various levels of success.

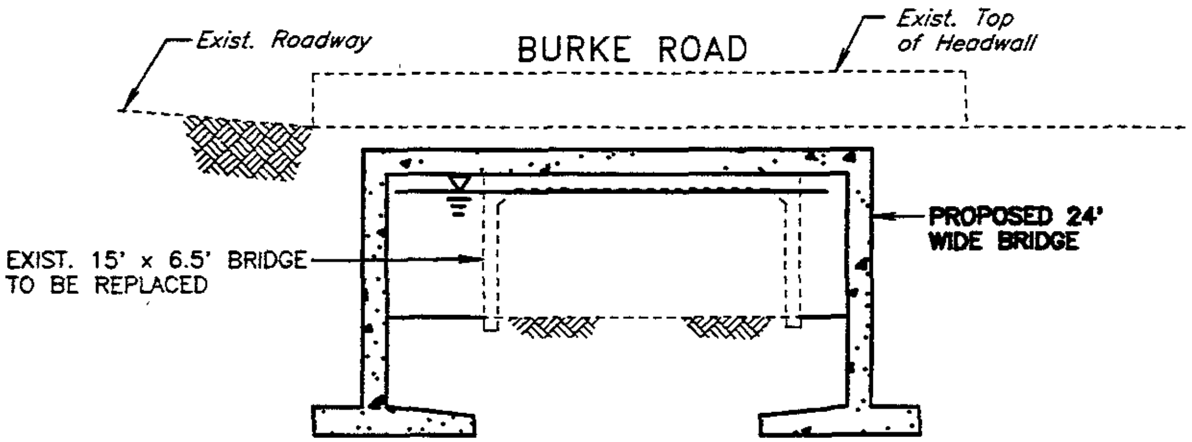
Land use in this reach is primarily residential with Shoup Park and the Redwood Grove Nature Preserve owned by the City of Los Altos. There is little encroachment by property owners through this reach. The District has discontinuous easements through this reach.

Proposed Measures

The proposed channel modification measure consists of replacing the inadequate bridge at Burke Road. In addition, the District would pursue a new maintenance program.

The replacement would consist of a 24-foot wide bridge approximately on the same alignment as the existing bridge. The upstream and downstream transition structures would also be reconstructed.

Figure 7.5 shows a typical section of the proposed bridge.



BURKE ROAD BRIDGE REPLACEMENT

Figure 7.5

TYPICAL SECTIONS

REACH 7 RECOMMENDED PROJECT

NTS

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.

Construction Procedures

Construction of the Burke Road bridge would generally conform to the procedure specified for El Camino Real in Reach 1. During construction, one lane in each direction and a single sidewalk will be maintained.

Prior to construction of the bridge, the existing gas and water lines that cross the creek would be relocated.

Reconstruction of the transition structures would involve: removal of the existing concrete transitions, excavation of the channel to widen the transitions, and installation of new concrete transitions into and out of the bridge.

Water flowing in the creek during the culvert construction may be blocked and diverted around the construction area using pumps and pipes.

A possible staging area for the construction equipment could be on property adjacent to the bridge on the right bank or on the partially vacant lot downstream of the culvert (right bank). Access to the construction area would be from Burke Road.

Impacts

Direct Impacts of Construction

All of the privacy and security, utility relocation, noise, traffic, water quality, and air quality impacts in this reach would be similar to the impacts discussed for Reach 1.

Vegetation Impacts

The total vegetation impacts for the culvert construction is 1,644 Sq. Ft. (0.04 acres).

Mitigation

Construction Mitigation

All of the privacy and security, utility relocation, noise, traffic, water quality, and air quality mitigation in this reach would be similar to the mitigation discussed for Reach 1.

Vegetation Mitigation

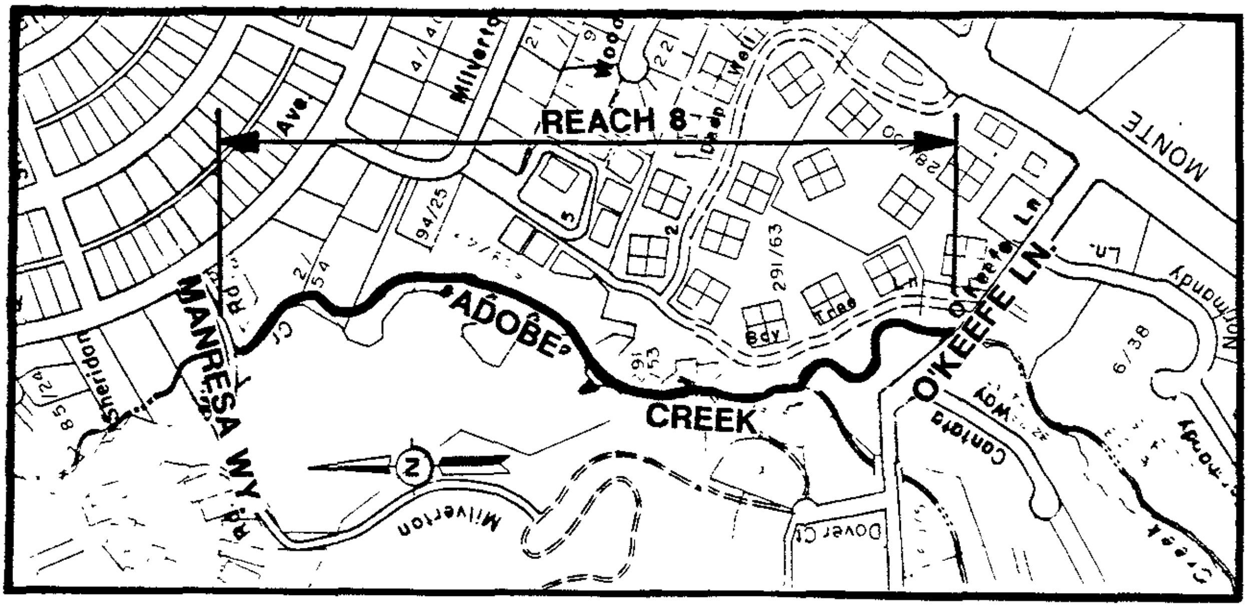
The total vegetation mitigation for the culvert construction is 2,744 Sq. Ft. (0.06 acres).

Monitoring

Detailed plans and specifications will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 7 is $535,000. A detailed cost estimate is included in Appendix F.



REACH 8: MANRESA WAY TO O'KEEFE LANE

Reach 8 extends from downstream of Manresa Way to downstream of O'Keefe Lane for a total length of 2,950 feet. The creek crossing at Manresa Way consists of a double 16-foot by 8-foot box culvert and a 7-foot diameter pipe. This combination has the capacity to convey the 1 percent flood flow. Immediately upstream of Manresa Way, gabion baskets line the banks to protect against creek bank erosion. Erosion is prevalent throughout this reach, with many SCSP, gunite, and rock placement jobs located along the creek banks. Most of the erosion problems in this reach are caused by the steep creek grade downstream of the O'Keefe Lane box culvert.

The District has a nonuniform easement throughout this reach, sporadically ranging from 25 feet to over 200 feet. Throughout this reach, the undeveloped right overbank is owned by the Jesuit Retreat House and residential development was sufficiently setback from the creek on the left overbank so that encroachment is not a problem.

Proposed Measures

The proposed measures are to perform erosion repairs and pursue a new maintenance program.

The proposed erosion control measures consist of the repair of two erosion sites. Described below are the site conditions and proposed repair methods for each location. Each location is identified by station number. This station number corresponds to the midpoint of the erosion sites.

At Station 464+00 there is a 6 foot vertical left bank, 30 feet in length. The channel has eroded almost to the edge of a fence at the top of the bank. The vertical bank is devoid of vegetation and has roots exposed. At the top of the bank at the upstream end is a California bay that has been severely undercut with many exposed roots. Also on the bank are small California bays, a black walnut, ivy, periwinkle, and Himalayan blackberry. At the downstream end of the site is a California bay that has been severely undercut and its roots exposed. The proposed erosion control measure is to place rock along the toe of the eroding slope. Rock will be placed to a height of 6 feet. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted. No vegetation removal is anticipated.

At Station 484+40 there is a 30 foot vertical right bank, 20 feet in length with the middle more eroded than the top and the toe. The slope face is mostly bare. At the upstream end some ivy and Himalayan blackberry overhang the bank. At the toe of the slope is a small amount of Himalayan blackberry and other non-native groundcovers. On the top of the bank at its edge is a valley oak that has many large exposed roots. The proposed erosion control measure is the placement of rock at the toe of the most eroded portion of the bank. Rock will be placed to a height of 6 feet. No cutback into the existing bank will be required. Soil will be placed in the spaces between the rocks and planted. Some overhanging vegetation might be removed, but is likely to recover naturally. The exposed roots of the valley oak could be disturbed.

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.

Construction Procedures

Construction of the rock riprap erosion repair sites would be done as described in Reach 1.

Impacts

Direct Impacts of Construction

Because of the limited amount of work to be done and the short duration of construction, the impacts due to construction would be minimal. There would be short duration site preparation, excavation, and equipment noise impacts.

Vegetation Impacts

The total vegetation impacts for the two erosion repair sites in this reach are 450 Sq. Ft. (0.01 acres).

Mitigation

Vegetation Mitigation

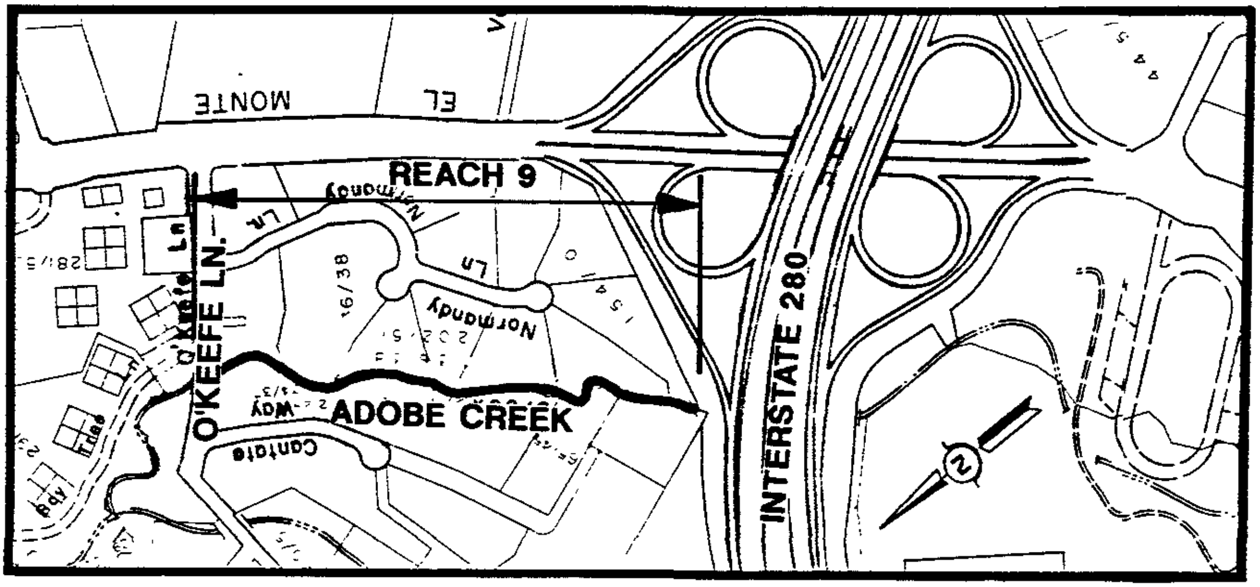
The total vegetation mitigation for the two erosion repair sites in this reach are 450 Sq. Ft. (0.01 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 8 is $17,000. A detailed cost estimate is included in Appendix F.



REACH 9: O'KEEFE LANE TO INTERSTATE 280

Reach 9 extends from downstream of O'Keefe Lane to downstream of Interstate 280 for a total length of 1,440 feet. The creek through this reach is natural, heavily vegetated, shallow, and narrow. Large homes have been constructed near the creek. The O'Keefe Lane box culvert has significantly affected the creek channel. The culvert is an 11-foot by 7-foot concrete box culvert that was constructed perched above the downstream channel. This has artificially maintained a shallow upstream channel and is causing severe erosion downstream. The land use in this reach is residential. The District has no right of way through this reach.

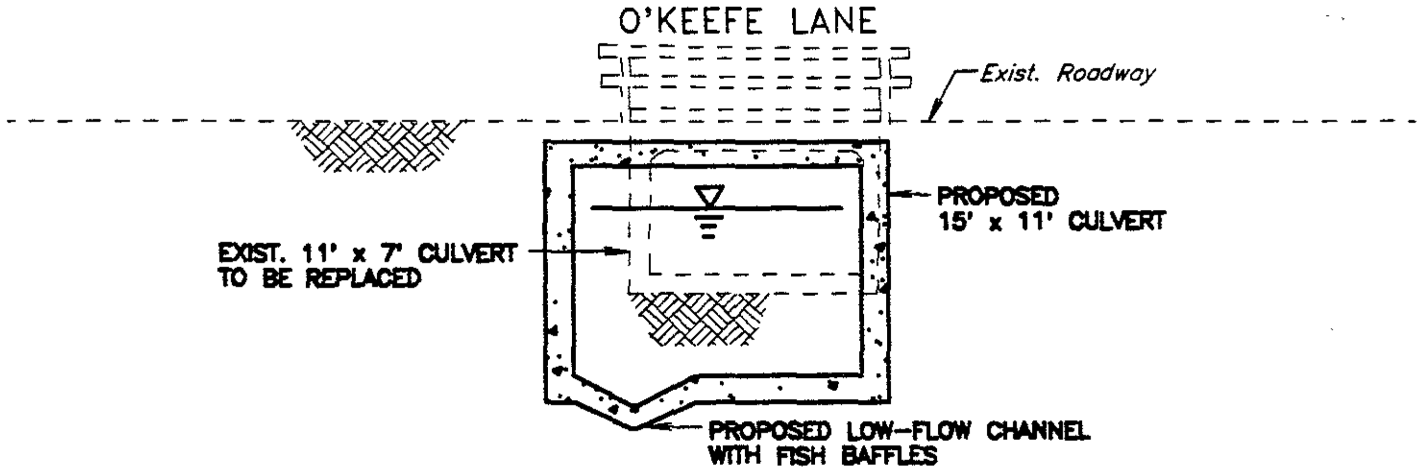
Proposed Measures

The proposed channel modification measure consists of replacing the existing inadequate culvert under O'Keefe Lane, and reconstructing the upstream and downstream transitions to the new bridge. In addition, the District would pursue a new maintenance program.

The proposed culvert will be 15 feet wide and 11 feet deep. The existing upstream concrete transition will be replaced with a transition that includes a drop inlet to the bridge. Downstream of the bridge, the transition would be reconstructed to reduce the extensive erosion that currently occurs.

Figure 7.6 shows a typical section of the proposed culvert

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.



O'KEEFE LANE CULVERT REPLACEMENT

Figure 7.6

TYPICAL SECTIONS

REACH 9 RECOMMENDED PROJECT

NTS

Construction Procedures

Construction of the O'Keefe Lane culvert would generally conform to the specified procedure for El Camino Real in Reach 1. During construction, one lane in each direction and a single sidewalk will be maintained.

Prior to construction of the culvert, the existing gas, water, sewer lines, and television cable that cross the creek would be relocated.

Reconstruction of the upstream transition structure would involve: removal of the existing concrete transition, excavation of the channel to widen the transition, and installation of a combination concrete transition and drop inlet to the bridge.

Downstream of the new bridge, channel protection would be installed to replace the existing rock, SCSP, and gunite.

Water flowing in the creek during the culvert construction may be blocked and diverted around the construction area using pumps and pipes.

A possible staging area for the construction equipment could be on the Jesuit Retreat property next to the culvert. Access to the construction area would be from O'Keefe Lane.

Impacts

Direct Impacts of Construction

All of the privacy and security, utility relocation, noise, traffic, water quality, and air quality impacts in this reach would be similar to the impacts discussed for Reach 1.

Vegetation Impacts

The total vegetation impacts for the culvert construction in this reach are 1,910 Sq. Ft. (0.04 acres).

Mitigation

Construction Mitigation

All of the privacy and security, utility relocation, noise, traffic, water quality, and air quality mitigation in this reach would be similar to the mitigation discussed for Reach 1.

Vegetation Mitigation

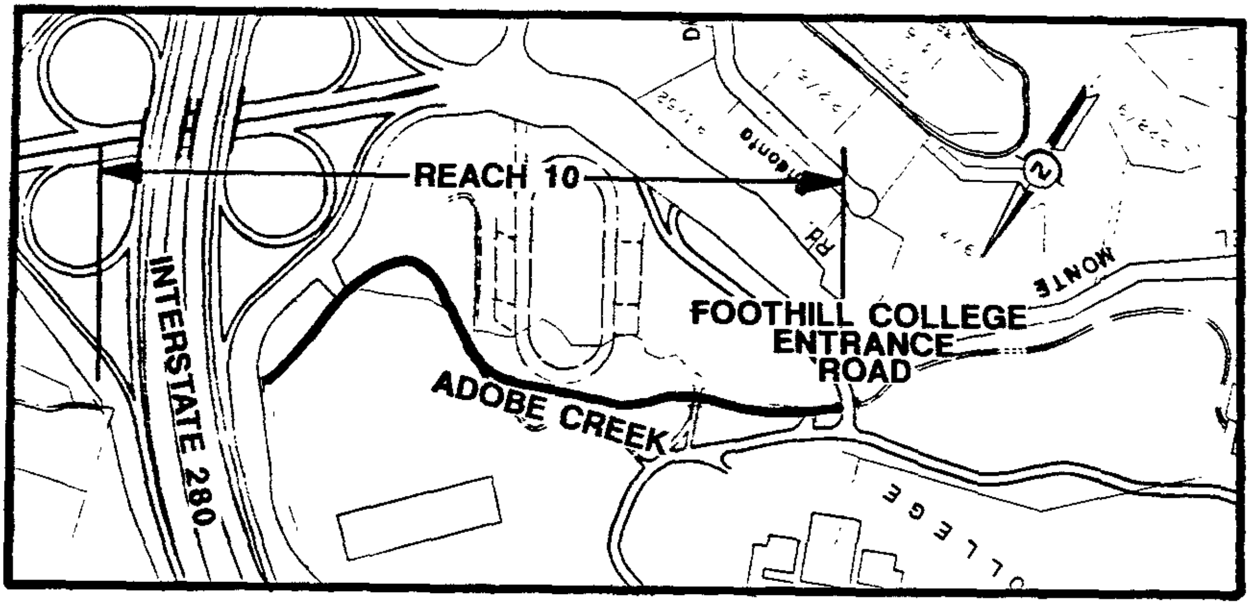
The total vegetation mitigation for the culvert construction in this reach are 3,130 Sq. Ft. (0.07 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformation to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 9 is $563,000. A detailed cost estimate is included in Appendix F.



REACH 10: INTERSTATE 280 TO THE FOOTHILL COLLEGE ENTRANCE ROAD

Reach 10 extends from downstream of Interstate 280 to downstream of the Foothill College Entrance Road for a total length of 2,045 feet. This reach contains two culvert crossings. The first is a double 11-foot by 10-foot concrete box culvert beneath Interstate 280. This culvert is adequate to pass the 1 percent flow. The second culvert is a double 8 foot diameter pipe culvert located at the midway point of the reach. This culvert was placed below the natural grade of the creek and the pipes are almost always partially filled with sediment and aquatic vegetation. Gunite has been placed upstream and downstream of this culvert to create transition structures. This culvert cannot contain the 1 percent flow.

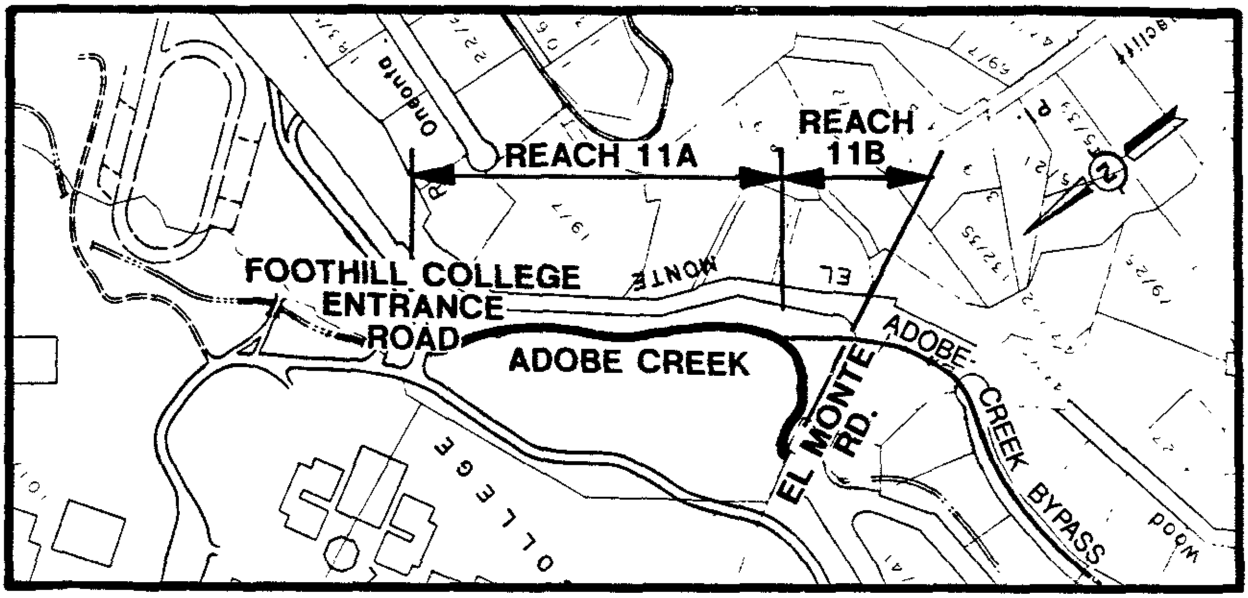
This reach is heavily vegetated with mature trees and vines. Downstream of the pipe culvert, maintenance buildings have been constructed up to the top of the creek's left bank and the backstop and dugouts for the ballfield encroach upon the creek from the right side. Minor erosion occurs through this reach with no threat to structures or property.

Reach 10 lies entirely within the Foothill Community College property. The District has a continuous easement through this reach. The easement has a width of 60 feet from the downstream end of the reach up to the pipe culverts. Upstream of the pipe culverts, the easement transitions into a 75 foot and remains a consistent 75 feet throughout the rest of the reach.

Proposed Measures

There are no proposed measures for this reach.

The District already has a continuous maintenance easement in this reach of Adobe Creek. Therefore, no additional easements are required. The continued maintenance would be performed as specified in the Maintenance Program Chapter of this report.



REACH 11: FOOTHILL COLLEGE ENTRANCE ROAD TO EL MONTE ROAD

Reach 11 extends from downstream of the Foothill College Entrance Road to just downstream of El Monte Road, a total length of 1,510 feet. The Adobe Creek 8-foot diameter bypass pipe rejoins the creek within this reach, splitting it into two subreaches with different 1 percent flow rates. The first subreach (Reach 11A) extends from the college entrance road to the bypass confluence structure, a distance of 1,098 feet. This subreach has a design flow rate of 2,000 cfs. The channel in this subreach is extremely steep with five gunite-lined drop structures and several rock placement slope protection areas. Erosion is an ongoing problem throughout this subreach, as is the deposit of sediment within the inadequately sized 8-foot double-pipe culvert beneath the college entrance road.

The second subreach (Reach 11B) extends upstream of the bypass confluence structure, a distance of 381 feet. This subreach has a 1 percent design flow rate of 1,100 cfs. The entire creek channel within this subreach has been lined with gunite. This portion of the creek has a very mild slope and fine silts deposit on top of the gunite lining. Existing problems throughout this subreach are sediment deposits within the bypass exit structure and flooding due to the inadequately sized channel.

The District has a continuous 75-foot easement through this reach. Reach 11 is located entirely within the Foothill Community College District property.

Proposed Measures

The proposed channel modification measure consists of constructing an excavated gabion lined low-flow channel with rock riprap on the channel bottom (the rock would be used only in Reach 11A) and vegetated high-flow benches on both sides above the gabions.

Reach 11A

The proposed channel modification in this subreach consists of a 20-foot wide low-flow channel that has rock riprap on the channel bottom and gabions for 6 feet up the sides. Above the gabions there are 8-foot wide high-flow benches and a 2:1 earthen slope from the landslide edge of the bench to the top of bank.

This measure includes a maintenance ramp on the right side of the channel opposite the exit of the bypass channel. A feature of this measure is to construct a drop structure in the creek channel at the exit of the bypass channel to scour the sediment that currently deposits at the exit of the bypass.

The maintenance of this subreach would be performed as specified in the Maintenance Program Chapter of this report.

Reach 11B

The proposed channel modification in this subreach consists of a 15-foot wide low-flow channel that has an earthen channel bottom and gabions for 6 feet up the sides. The high-flow benches and cut slope to the top of bank would be identical to those in Reach 11A.

A feature of this measure is to remove the present channel width restriction downstream of the El Monte Road culvert. This restriction causes large amounts of sediment to be deposited in the culvert.

The maintenance of this subreach would be performed as specified in the Maintenance Program Chapter of this report.

Figure 7.7 shows a typical section of the proposed channel modification measures.

Possible Project Variation

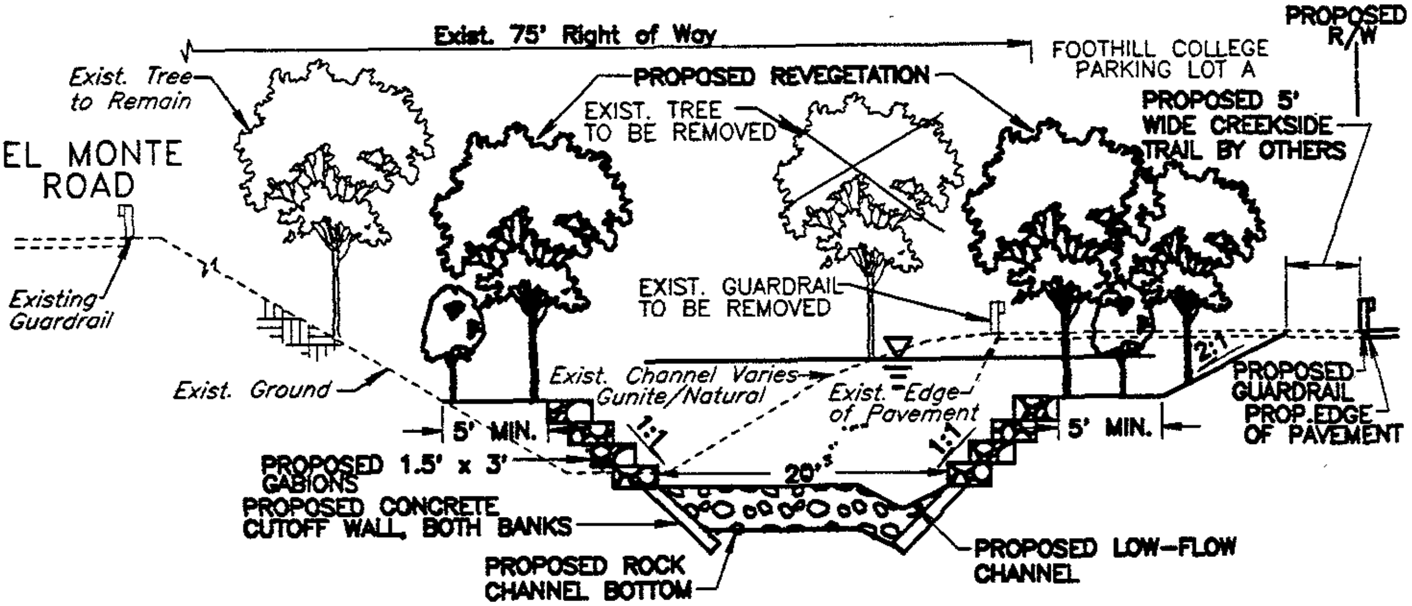
An option to the proposed project is to construct a channel within the same project footprint as the current proposed project with the same bottom width and 2:1 earthen side slopes. This project would have rock on the channel invert and up the channel side slopes to the 1.5-year flood level. This option would also have 10-foot wide bands of rock extending up the channel side slopes to the 10-year flood level spaced every 40 feet and in high-velocity sections of the channel. No rock would be required on the invert upstream of the bypass exit (same as existing proposed plan). The section of the channel with the fish passable drop structures would be constructed substantially as previously proposed.

Figure 7.8 shows a typical section of this option.

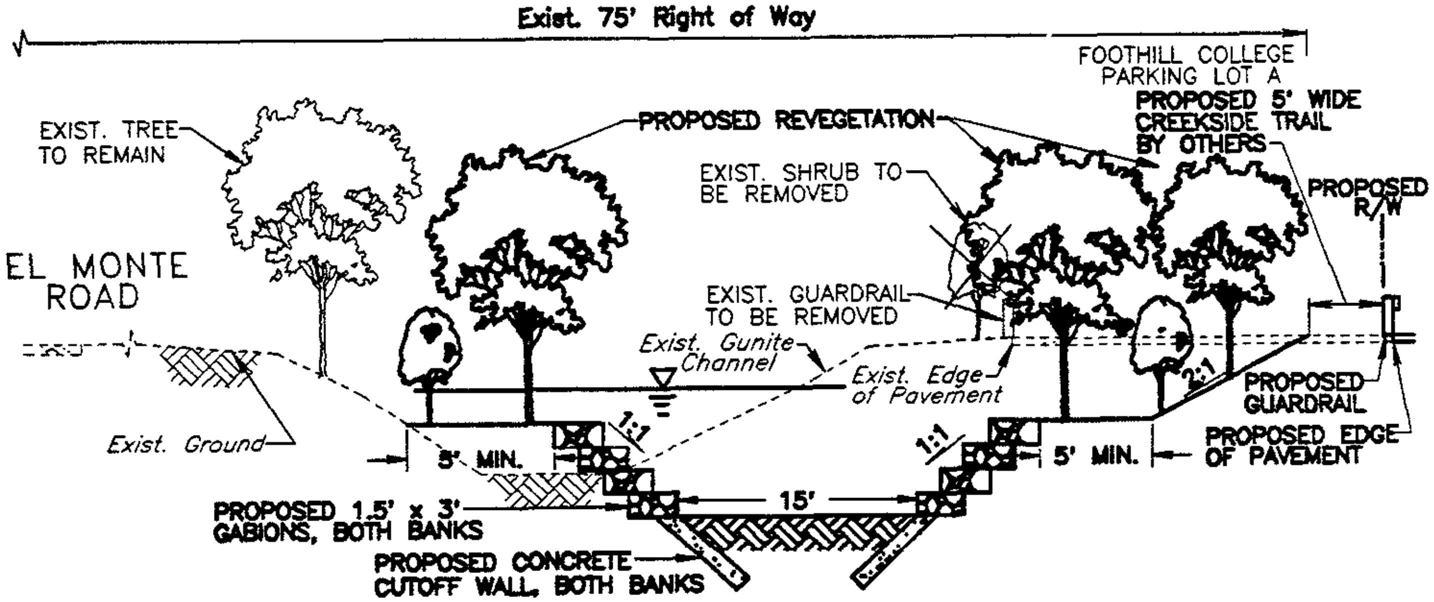
Construction Procedures

Reach 11A

The proposed channel modification in this subreach consists of a excavated channel with gabions on the channel sides and rock riprap on the channel bottom.


Exist. 75' Right of Way
FOOTHILL COLLEGE PARKING LOT A
PROPOSED R/W
Exist. Tree to Remain
PROPOSED REVEGETATION
EXIST. TREE TO BE REMOVED
PROPOSED 5' WIDE CREEKSIDE TRAIL BY OTHERS
EL MONTE ROAD
Existing Guardrail
EXIST. GUARDRAIL TO BE REMOVED
2:1
Exist. Ground
Exist. Channel Varies Gunite/Natural
Exist. Edge of Pavement
PROPOSED GUARDRAIL
PROP. EDGE OF PAVEMENT
5' MIN.
1:1
1:1
5' MIN.
20'
PROPOSED 1.5' x 3' GABIONS
PROPOSED CONCRETE CUTOFF WALL, BOTH BANKS
PROPOSED ROCK CHANNEL BOTTOM
PROPOSED LOW-FLOW CHANNEL

GABION/ROCK
CHANNEL BOTTOM
WITH HIGH FLOW BENCHES
CROSS SECTION STATION 529+00±


Exist. 75' Right of Way
FOOTHILL COLLEGE PARKING LOT A
EXIST. TREE TO REMAIN
PROPOSED REVEGETATION
PROPOSED 5' WIDE CREEKSIDE TRAIL BY OTHERS
EXIST. SHRUB TO BE REMOVED
PROPOSED R/W
EL MONTE ROAD
EXIST. GUARDRAIL TO BE REMOVED
Exist. Gunite Channel
Exist. Edge of Pavement
2:1
PROPOSED GUARDRAIL
Exist. Ground
1:1
1:1
5' MIN.
5' MIN.
PROPOSED EDGE OF PAVEMENT
15'
PROPOSED 1.5' x 3' GABIONS, BOTH BANKS
PROPOSED CONCRETE CUTOFF WALL, BOTH BANKS

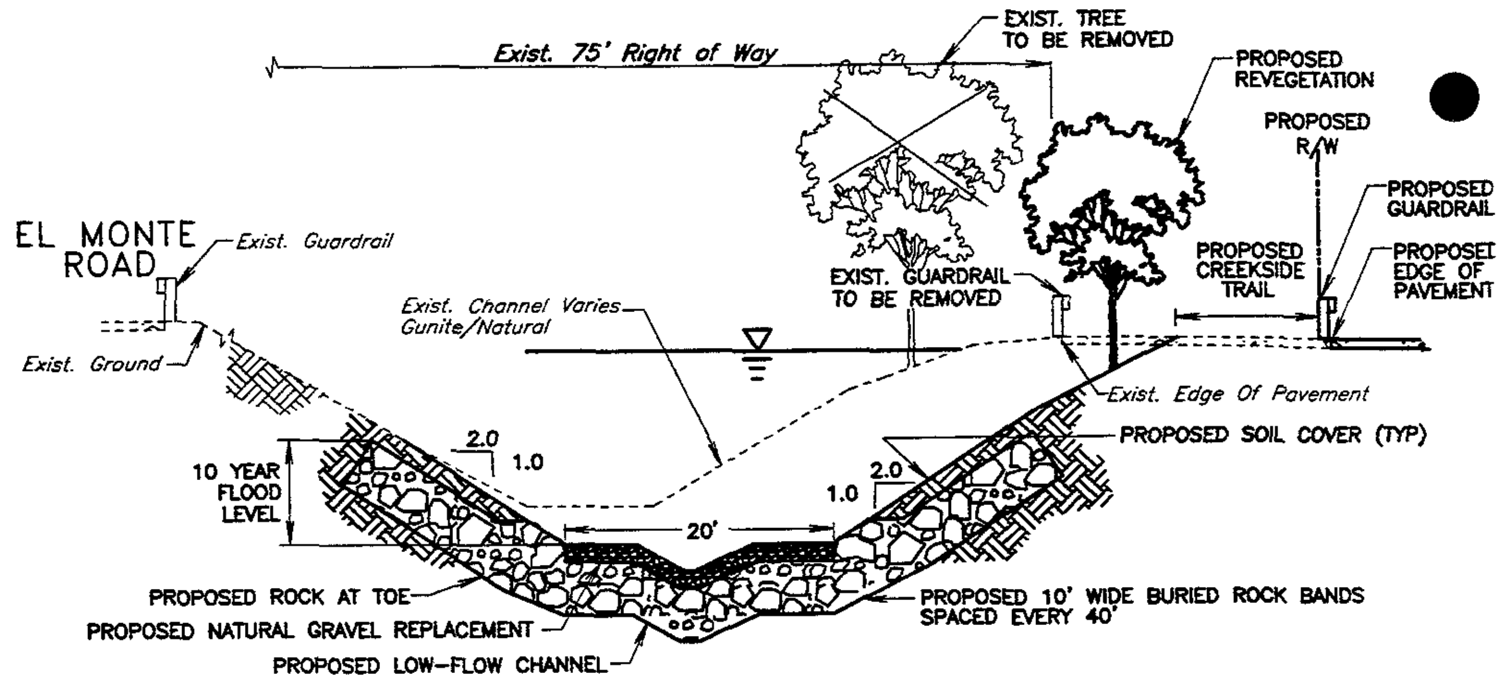
GABION/NATURAL CHANNEL BOTTOM
WITH HIGH FLOW BENCHES
CROSS SECTION STATION 534+00±

Figure 7.7

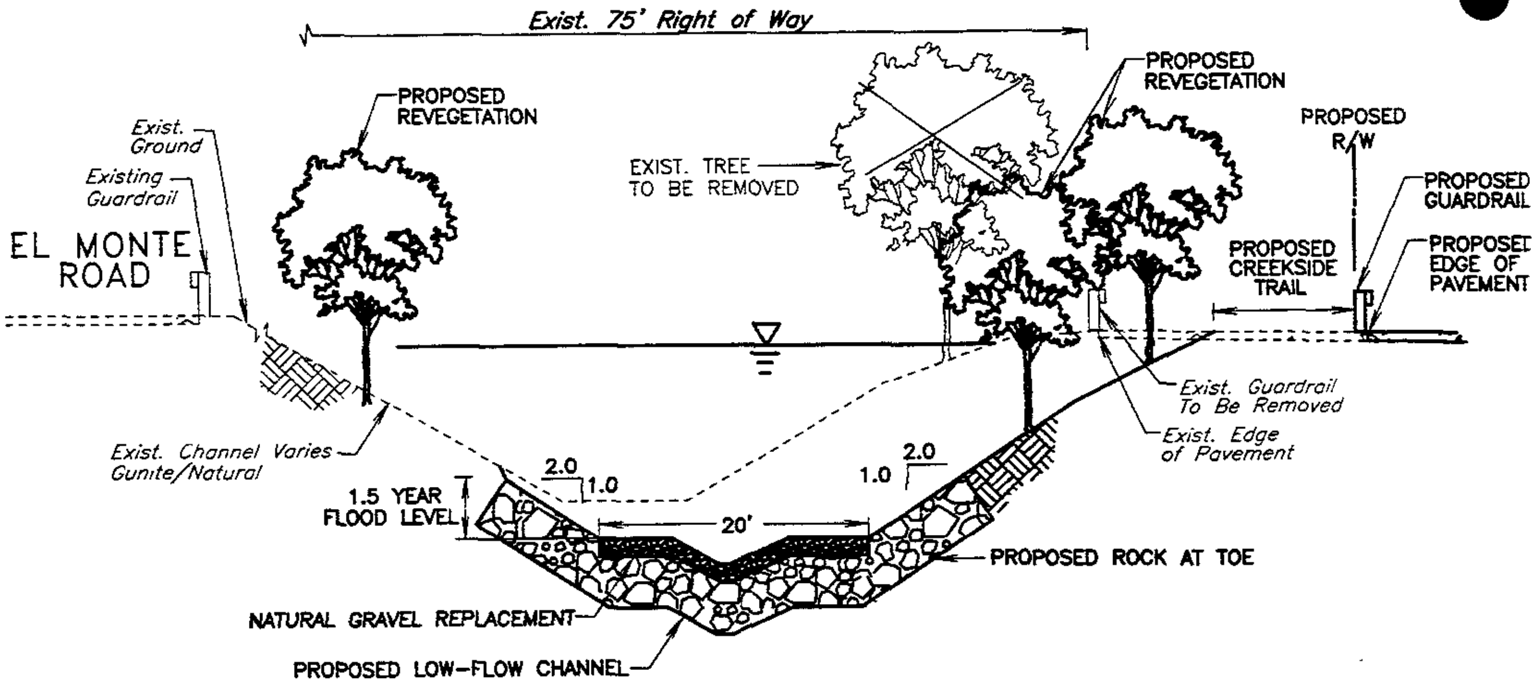
TYPICAL SECTIONS

REACH 11 RECOMMENDED PROJECT

NTS


Exist. 75' Right of Way
EXIST. TREE TO BE REMOVED
PROPOSED REVEGETATION
PROPOSED R/W
PROPOSED GUARDRAIL
PROPOSED CREEKSIDE TRAIL
PROPOSED EDGE OF PAVEMENT
EL MONTE ROAD
Exist. Guardrail
Exist. Ground
Exist. Channel Varies Gunite/Natural
EXIST. GUARDRAIL TO BE REMOVED
Exist. Edge Of Pavement
PROPOSED SOIL COVER (TYP)
2.0
1.0
10 YEAR FLOOD LEVEL
20'
PROPOSED ROCK AT TOE
PROPOSED NATURAL GRAVEL REPLACEMENT
PROPOSED LOW-FLOW CHANNEL
PROPOSED 10' WIDE BURIED ROCK BANDS SPACED EVERY 40'

PROPOSED ROCK BANDS



TOE PROTECTION

Figure 7.8

TYPICAL SECTIONS

REACH 11 POSSIBLE PROJECT VARIATIONS

Included in this measure is a maintenance ramp on the right side of the channel opposite the exit of the bypass channel.

Construction of the channel modifications would include: removal of the existing gunite and rock, excavation of the channel, placement of rock on the channel bottom and four rows of 1½-foot stepped gabions on the side slopes, and construction of four "fish passable" drop structures.

Reach 11B

The proposed channel modification in this subreach consists of an excavated channel with gabions on the channel sides and a natural channel bottom.

Construction of the channel modifications would include: removal of the existing gunite channel, excavation of the channel, placement of four rows of 1½ foot stepped gabions on the channel side slopes, and construction of a "fish passable" drop structure downstream of the El Monte Road culvert.

Revegetation areas in this reach would be planted with riparian plant species as designated in the mitigation plan after all construction activities are completed. Typically this would be done in fall for the best survival rates.

Water flowing in the creek during the channel construction may be blocked and diverted around the construction area using pumps and pipes.

The possible staging area for construction would be on the project site in the Foothill College Parking Lot A. Access to the construction area would be from El Monte Road and the College Entrance Road.

Impacts

Parking Impacts

This alternative removes 67 parking spaces from Foothill College Parking Lot A.

Direct Impacts of Construction

All of the utility relocation, noise, traffic, water quality, and air quality impacts in this reach would be similar to the impacts discussed for Reach 1.

Vegetation Impacts

The total vegetation impacts for the channel modification in this reach are 17,416 Sq. Ft. (0.40 acres).

Mitigation

Parking Mitigation

Sixty-seven new parking spaces would be constructed other places on campus. Any design for parking areas will be approved by the college board prior to construction.

Construction Mitigation

All of the utility relocation, noise, traffic, water quality, and air quality mitigation in this reach would be similar to the mitigation discussed for Reach 1.

Vegetation Mitigation

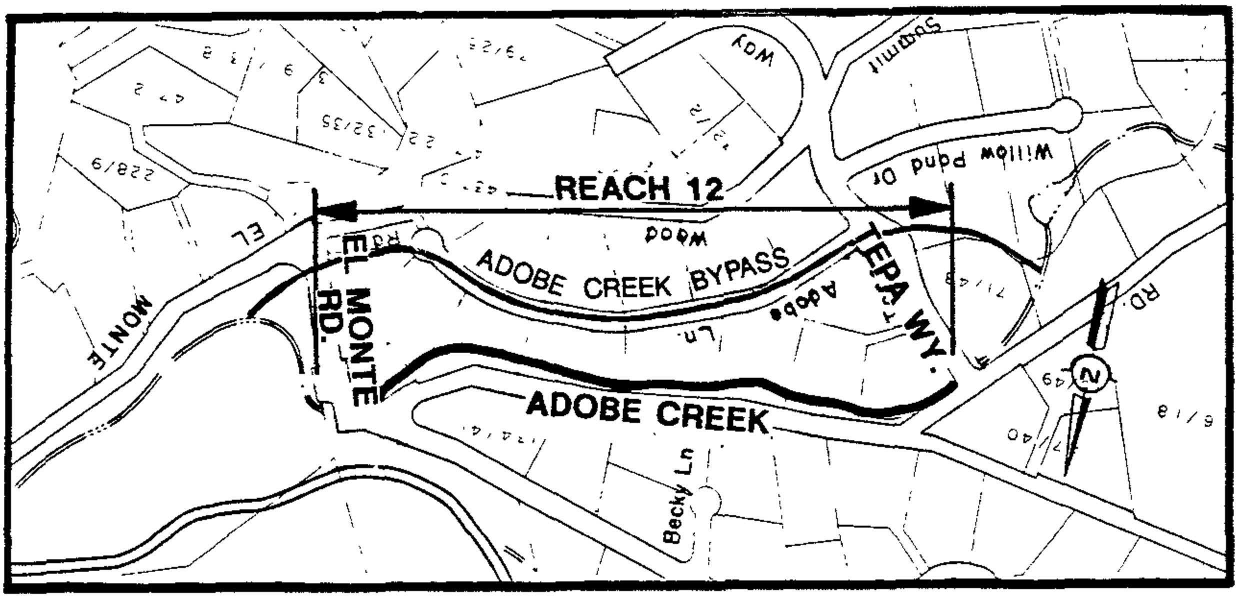
The total vegetation mitigation for the channel modification in this reach are 42,143 Sq. Ft. (0.97 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformation to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 11 is $2,156,000. A detailed cost estimate is included in Appendix F.



REACH 12: EL MONTE ROAD TO TEPA WAY

Reach 12 extends from downstream of El Monte Road to downstream of Tepa Way, a total length of 1,815 feet. The existing double 10-foot by 8-foot reinforced concrete box culvert under El Monte Road is adequately sized for the 1 percent flood flow but, due to the inadequacies of the downstream channel, the culvert continuously fills up with sediment. The creek upstream is bordered by residential property owners on the left bank and Moody Road on the right bank. The average channel slope in this reach is very steep. Consequently, the creek has erosion problems throughout this reach. A 442-foot length of the creek in this reach is completely lined with gunite. Other areas experience severe erosion from overbank drainage off of Moody Road. Homeowner constructed footbridges through this reach contribute to the flooding and erosion problems by encroaching into the creek flow area. The District has a 45-foot wide easement throughout this reach, excluding a 100-foot length of the creek immediately upstream of El Monte Road, which is owned by the Purissima Hills Water District.

Proposed Measures

The proposed measures are to perform erosion repairs and pursue a new maintenance program.

The proposed erosion control measures consist of the repair of one erosion site and the installation of two vortex rock weirs. Described below are the site conditions and proposed repair methods for each location. Each location is identified by station number. This station number corresponds to the midpoint of the erosion sites or the proposed location of the vortex rock weirs.

At Station 553+80 both banks are eroded to almost vertical for about 60 feet along the creek. On the right vertical bank is mostly dead Himalayan blackberry. At the top of the right bank is a black walnut and a mixture of grasses, Himalayan blackberry, periwinkle, and thistles. The left, vertical bank is only sparsely vegetated with Himalayan blackberry, ivy, and thistle. At the top of the bank is an arroyo willow, a single-stemmed cherry, and a multi-stemmed cherry. Two large pines are further up the bank; their roots may be exposed on the bank. The proposed erosion control measure is to place geocell to 10 feet vertically on both banks. The side slope of the left bank will be maintained as much as possible, which may require more cutting into the right bank. Geocell was selected due to the restricted width of this site. The willow and cherries on the left bank will not be removed and the geocell will be formed around them if necessary. On the right bank the vegetation to be removed includes the black walnut. The total riparian area impacted is 875 square feet, primarily comprising the canopy of the black walnut.

A vortex rock weir at Station 553+50 is proposed as part of this erosion site repair. This structure will help to protect the erosion repair by stabilizing the channel bottom in the vicinity of the site.

At Station 555+00 the proposed measure is the construction of a vortex rock weir. The existing creek channel in the vicinity of this location is being severely undercut. Installation of a vortex rock weir will limit channel bottom erosion in the vicinity of the weir.

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. *A proposed easement line for the maintenance corridor is shown on the project plan and profile* plates. This is illustrated with a typical section on Figure 7.2.

Construction Procedures

Erosion Repair

Construction of a geocell erosion repair site would be done as described in Reach 4.

Vortex Rock Weirs

Vortex rock weirs will be constructed as described in Reach 1.

Impacts

Direct Impacts of Construction

Because of the limited amount of work to be done and the short duration of construction, the impacts due to construction would be minimal. There would be short duration site preparation, excavation, and equipment noise impacts.

Vegetation Impacts

The total vegetation impacts for the erosion repair site and two vortex rock weir sites in this reach are 1,080 Sq. Ft. (0.02 acres).

Mitigation

Vegetation Mitigation

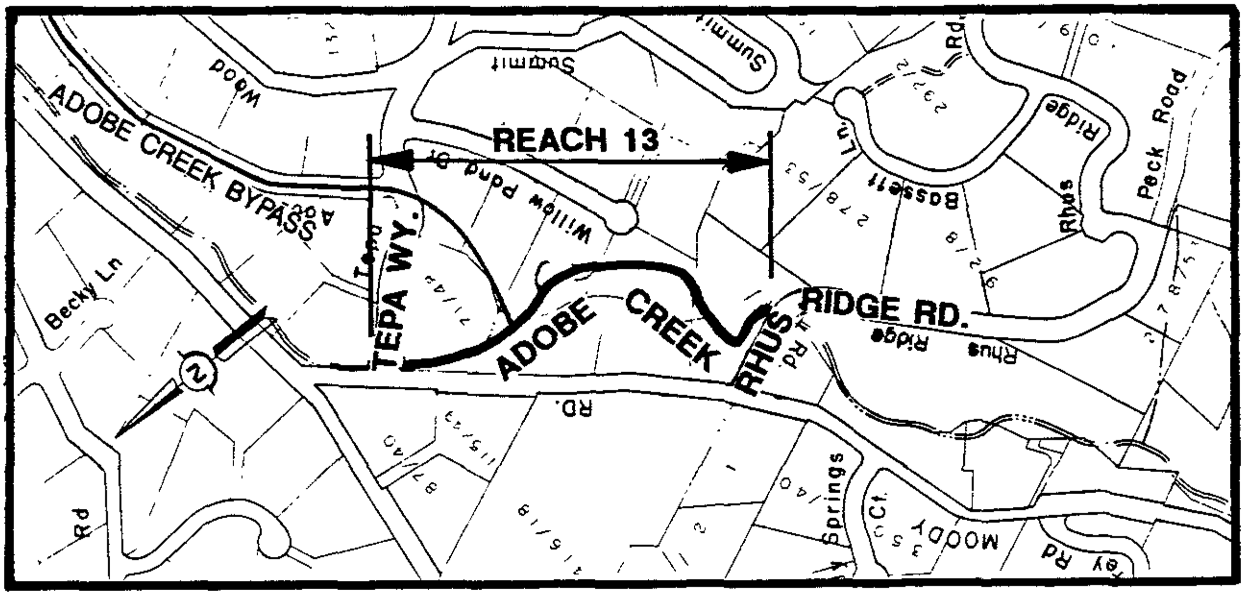
The total vegetation mitigation for the erosion repair site and two vortex rock weir sites in this reach are 1,630 Sq. Ft. (0.04 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total estimated project cost in Reach 12 is $119,000. A detailed cost estimate is included in Appendix F.



REACH 13: TEPA WAY TO RHUS RIDGE ROAD

Reach 13 extends from downstream of Tepa Way to downstream of Rhus Ridge Road, a total length of 1,150 feet. The 8-foot diameter bypass pipe inlet structure is located approximately 400 feet upstream of Tepa Way. This reach is heavily vegetated with fairly steep slopes. Some rock placement has been used to protect against erosion. Tepa Way is a 10-foot by 6-foot reinforced concrete box culvert, undersized for the 1 percent flood flow.

This entire reach is residential with homes setback enough to have little affect on the creek. The District has a continuous 45-foot easement for most of the reach, as well as access to the bypass inlet structure from Moody Road and Tepa Way.

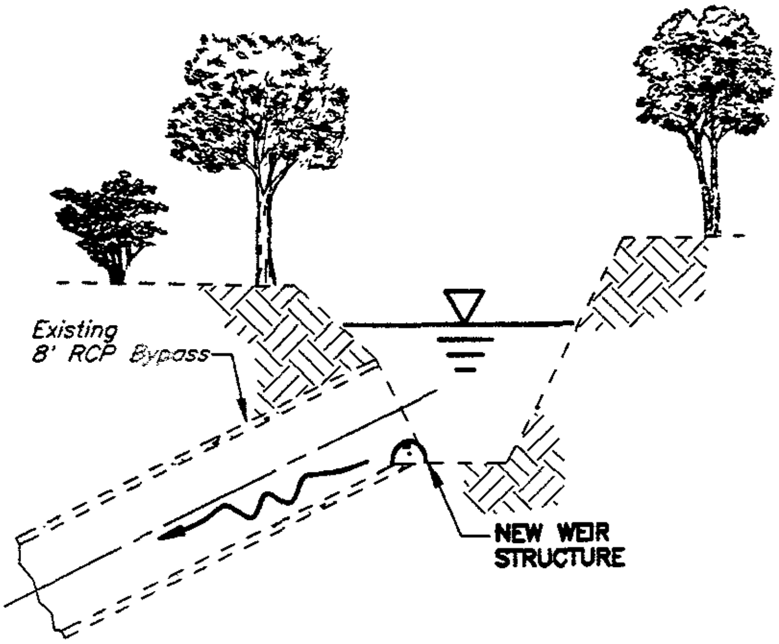
Proposed Measures

A proposed measure is to improve the existing entrance to the bypass channel. An additional proposed measure is to pursue a new maintenance program.

The proposed bypass entrance improvement would consist of removing the existing concrete entrance structure and debris rack, and constructing a new concrete entrance structure and debris rack.

Figure 7.9 shows typical sections of this proposed measure.

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.



BYPASS ENTRANCE STRUCTURE MODIFICATION

Figure 7.9

TYPICAL SECTIONS
REACH 13 RECOMMENDED PROJECT
NTS

Construction Procedures

Construction of the entrance structure would include: removal of part of the existing entrance structure, excavation for the new entrance structure, and forming and pouring the new concrete entrance structure.

The possible staging area for construction would be on District right of way over the bypass pipe between the pipe entrance and Tepa Way. Access to the construction area would be from existing District easements from Tepa Way and Moody Road.

Deferred Measures

The deferred measure for this reach consists of replacing the inadequate culvert at Tepa Way.

The replacement would consist of a 15-foot by 8-foot box culvert on the same alignment as the existing culvert. The upstream and downstream transition structures would also be reconstructed.

This measure is included in the proposed project but is not in the scheduled construction. The District would participate as a cost-shared partner (see Appendix K), if the bridge is replaced by another party, such as a city, for traffic or structural reasons.

Impacts

Direct Impacts of Construction

All of the privacy and security, noise, water quality, and air quality impacts in this reach would be similar to the impacts discussed for Reach 1.

Vegetation Impacts

There are no vegetation impacts for the construction of the bypass entrance modification. The vegetation impacts for the deferred culvert replacement are 1,230 square feet (0.03 acres).

Mitigation

Construction Mitigation

All of the privacy and security, noise, water quality, and air quality mitigation in this reach would be similar to the mitigation discussed for Reach 1.

Vegetation Mitigation

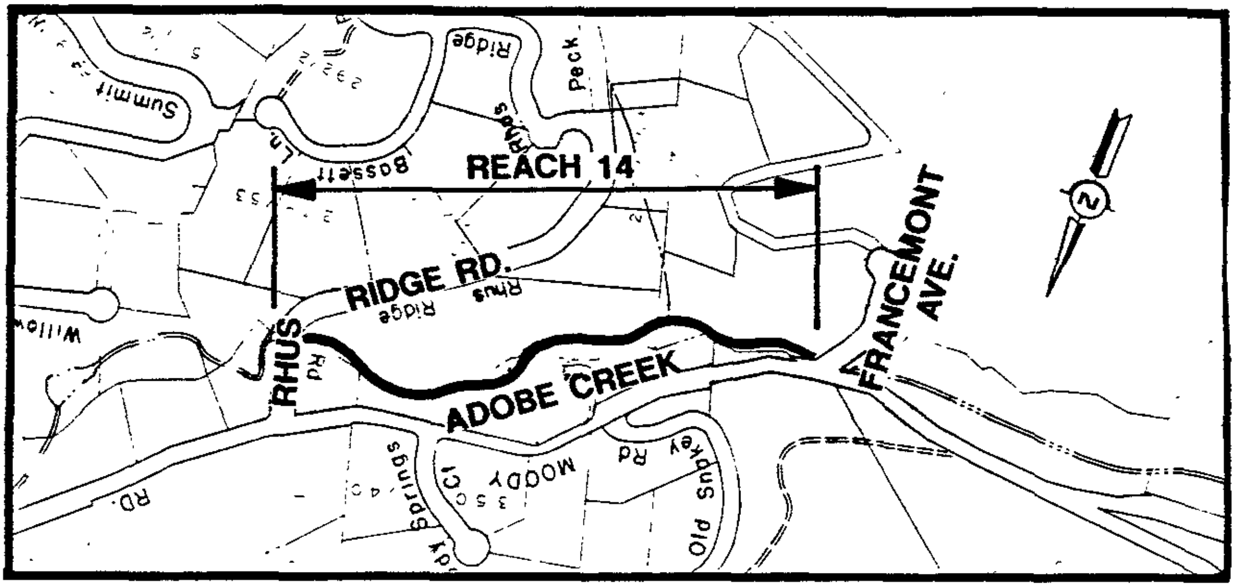
No vegetation mitigation is required for construction of the bypass entrance modification. The vegetation mitigation for the deferred culvert replacement are 1,975 square feet (0.05 acres).

Monitoring

Detailed plans and specifications for mitigation will be developed by the District. District inspectors will oversee implementation to ensure conformance to the specifications. The conceptual basis for the mitigation and monitoring plan is included in the attached EIR.

Costs

The total project cost for Reach 13 is $65,000. A detailed cost estimated is included in Appendix F.



REACH 14: RHUS RIDGE ROAD TO FRANCEMONT AVENUE

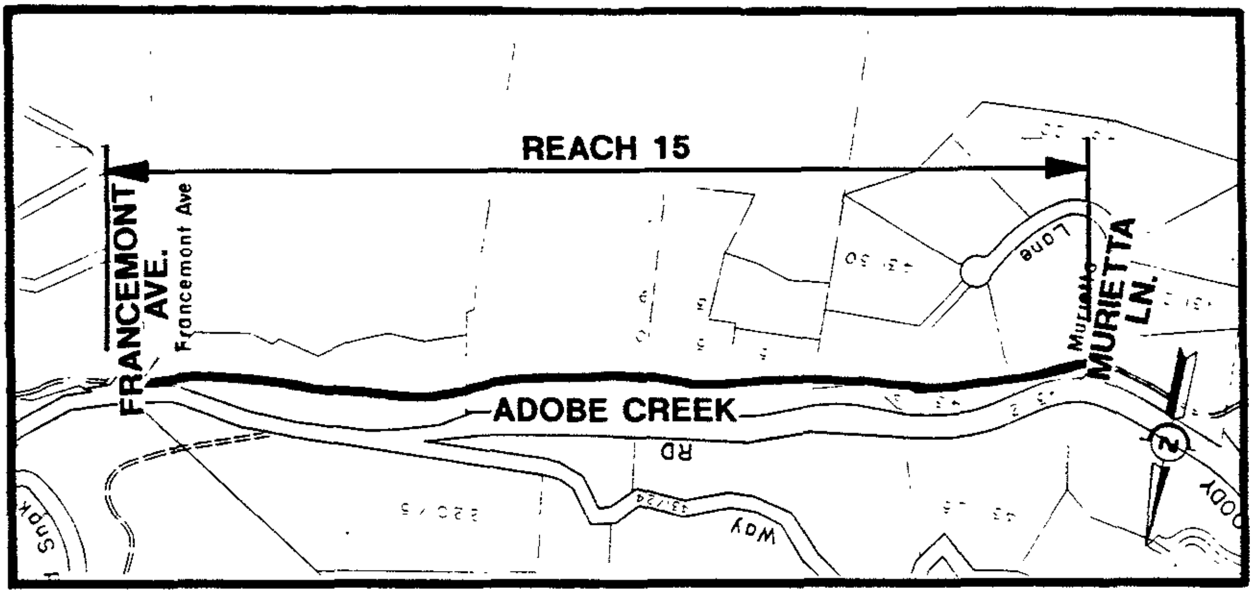
Reach 14 extends from downstream of Rhus Ridge Road to downstream of Francemont Avenue for a total length of 1,685 feet. Two large drop structures with drops of 5 and 6½ feet have created a mild slope in this reach resulting in a minimal amount of erosion. Rhus Ridge Road is under 1 percent flood flow capacity but causes no severe problems.

The land use in this reach is residential with some homes constructed close to the creek, but the creek shows no encroachment problems. The District has no right of way through this reach.

Proposed Measures

The proposed measure is to pursue a new maintenance program.

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.



REACH 15: FRANCEMONT AVENUE TO MURIETTA LANE

Reach 15 extends from downstream of Francemont Avenue to downstream of Murietta Lane for a total length of 2,635 feet. A new crossing at Francemont Avenue was recently constructed (1992) and consists of a 25-foot wide by 10-foot high arched concrete culvert. In addition, as part of the Adobe Creek Estates Subdivision Development, two other crossings were constructed in 1992 and a 1 percent capacity channel modification was constructed in 1993. The Adobe Creek Lodge Road and Bellucci Drive bridges are both 48-foot single span wooden bridges constructed over a newly built 833-foot long excavated channel with a bottom width of 18 feet and side slopes of 2 feet horizontal to 1-foot vertical.

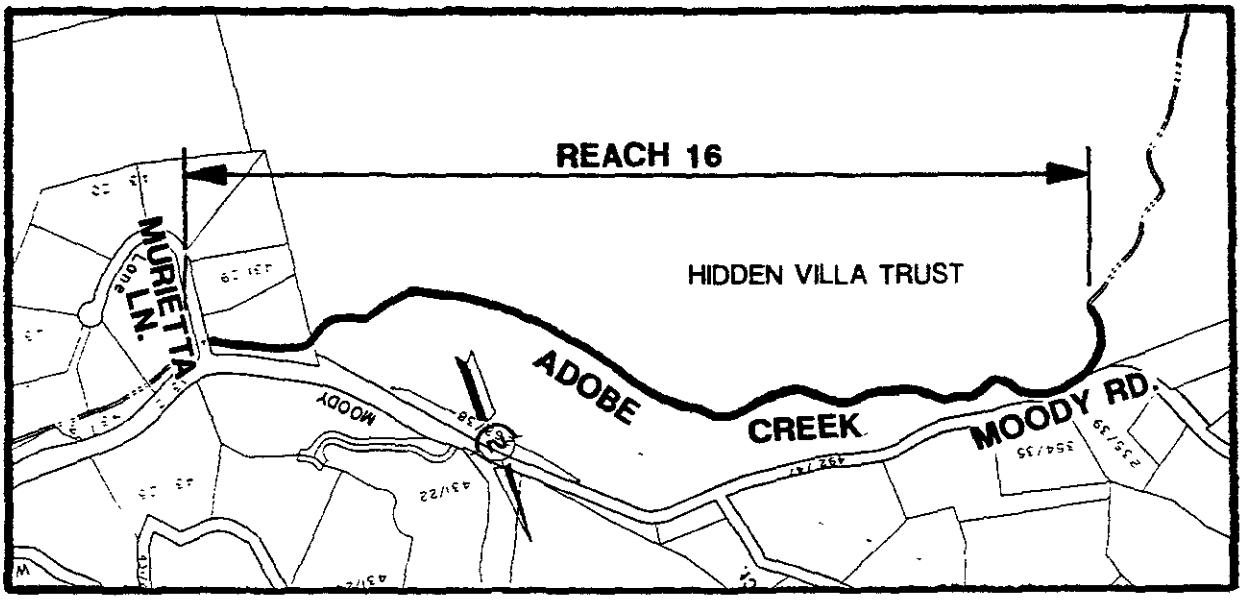
The new channel is lined with a combination of ¼-ton riprap on the channel invert, 2 feet up the channel sides, and at all outfalls; broken concrete from 75 pounds to ¼-ton on the channel sides above the riprap; 4-foot wide bands of ¼-ton riprap across the channel every 100 feet; ½-ton riprap on the transitions at the downstream and upstream ends of the channel and compacted native fill from 6 to 12 inches in thickness covering the broken concrete and riprap on the channel banks.

The land use in this reach is residential. The homes are relatively large with large lots, and encroachment is not a factor. The District has no easements through this reach. A maintenance easement along the newly constructed channel section will be dedicated as part of the Adobe Creek Estates development.

Proposed Measures

The proposed measure is to pursue a new maintenance program.

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.



REACH 16: MURIETTA LANE TO END OF PROJECT

Reach 16 extends from downstream of Murietta Lane to the limits of this planning study, a distance of 4,415 feet. The majority of this reach lies adjacent to open pasture land, on property owned by the Hidden Villa Trust. Some erosion occurs within this reach but, due to the lack of development in the area, the erosion has no potential to impact structures. No right of way is owned by the District within this reach.

Proposed Measures

The proposed measure is to pursue a new maintenance program. Beyond 375 feet upstream of Murietta Lane the Hidden Villa Trust property starts. Hidden Villa Trust currently does all the maintenance work on Adobe Creek on their property.

Maintenance would be performed as specified in the Maintenance Program Chapter of this report. The maintenance program will cover the portion of the creek on the Hidden Villa Trust property. This can be used by Hidden Villa Trust personnel or by the District should an easement be obtained.

A proposed easement line for the maintenance corridor is shown on the project plan and profile plates. This is illustrated with a typical section on Figure 7.2.

CHAPTER 8
MAINTENANCE PROGRAM

A maintenance program is necessary to ensure continued functionally, public safety, and effective stabilization of Adobe Creek, from El Camino Real to the upstream limits of the study on the Hidden Villa Trust property.

This chapter outlines the proposed maintenance activities of the District for Adobe Creek. After approval of this document, these guidelines will supersede the existing maintenance program. This maintenance program will be performed in accordance with the governing regulatory permits (Memorandum of Understanding [MOU] and Streambed Alteration Permits with the California Department of Fish and Game and Section 404 of the Clean Water Act administered by the U.S. Army Corps of Engineers).

Maintenance activities for proposed modifications on Adobe Creek will begin after completion of construction and will be performed under the Routine Maintenance Activities in the Improved Channel MOU. Maintenance activities have been and will only be performed on areas where the District has a right of way as stated in the Engineering Policies and Procedures 3-330 (see Appendix L). Table 8.2, at the end of the chapter, contains maintenance standards for removal of sediment and vegetation on Adobe Creek.

Residents along Adobe Creek that are responsible to maintain the creek on their property should use this program as a guide. Permits are required by District Ordinance 83-2 for any work done within the District's jurisdiction (see Appendix J).

MAINTENANCE ACTIVITIES

The goals of the maintenance program include: restoring the channel to design conditions, repairing channel facilities as necessary, and eliminating hazardous conditions. The channel will be restored to design conditions by controlling woody growth in the creek channel and by removing accumulated debris and sediment. Channel protection and conveyance structures (bridges, culverts, rock lining, gabion baskets, articulated concrete blocks [ACB], vortex rock weirs, etc.) will be repaired as necessary. Hazardous conditions will be eliminated by repairing and protecting eroding channel banks, protecting degrading channel bottom, and removing obstructions to flow such as fallen trees and debris. District personnel will perform annual inspections to determine needed maintenance on Adobe Creek.

Severe erosion that causes hazardous steep banks, loss of vegetation, and bare soil is environmentally damaging. The District will install appropriate measures to protect eroding channel banks. The District will also install vortex rock weirs to stop excessive degradation of the channel bottom. As erosion repair measures are constructed, concrete rubble will be removed where appropriate.

Sediment in the channel will be allowed to accumulate to an acceptable maintenance limit. When this limit is exceeded, the accumulated sediment would be considered an obstruction to flow and the channel will be restored to design conditions. See Table 8.2 for sediment limits.

Vegetation in the channel (toe of bank to toe of bank) will be allowed to grow to an acceptable maintenance limit. When this limit is exceeded, the vegetation would be considered an obstruction to flow and the channel will be restored to design conditions. Between maintenance cycles vegetation will provide habitat value and shading. See Table 8.2 for vegetation limits.

Obstructions to flow such as fallen trees and debris will be removed from the creek as needed.

Maintenance activities within the channel will be scheduled to minimize adverse impacts to fish and wildlife resources and their habitat. Periods of concern are March through June for nesting birds and October through March for fish.

Erosion Protection

Soil erosion is a natural process which occurs both on the channel banks and bottom. As bank erosion occurs, vegetation is lost, soil is lost, property improvements may be threatened, and channel capacity may be compromised. As the creek bottom erodes, the channel becomes deeper and more incised, resulting in less stable banks with greater potential for bank erosion and failure. Increased soil erosion on the channel banks and bottom increases suspended sediment in the creek degrading aquatic habitat.

District employees monitor Adobe Creek for developing erosion sites. Sites which are **actively eroding** will be subject to either (1) preventative slope protection, or (2) remedial slope protection. Preventative slope protection will be implemented and monitored at sites where banks are vertical or undercut up to 8 feet vertically (Figure 8.1). Remedial slope protection will be implemented at sites where preventative maintenance was implemented and did not succeed, where preventative maintenance is highly unlikely to be sufficient to eliminate continued bank erosion, or where the bank is vertical or undercut greater than 8 feet vertically (Figure 8.1).

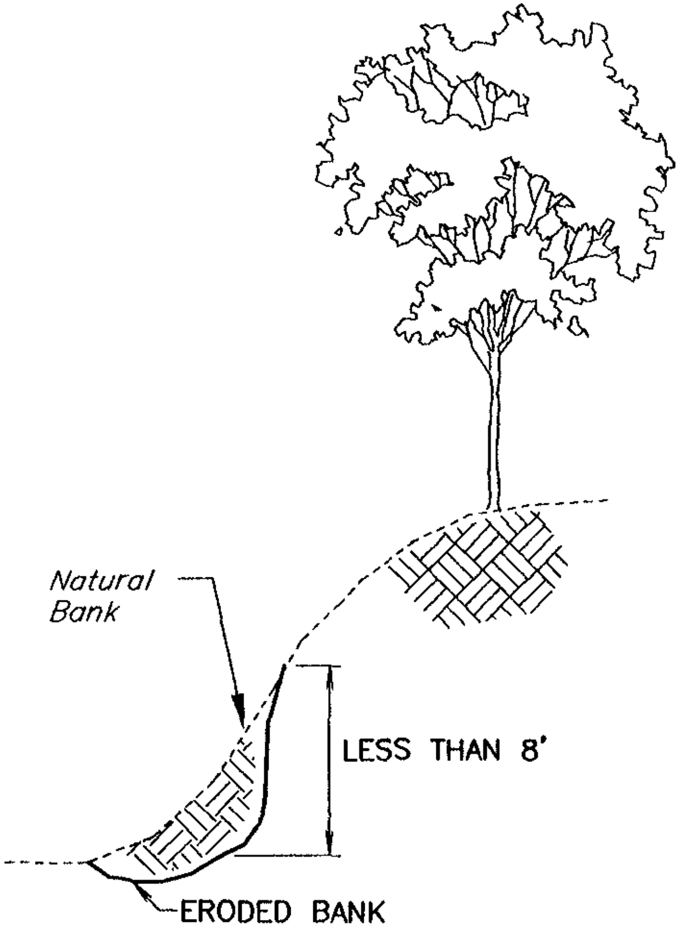
Preventative Slope Protection

Preventative slope protection consists of protecting the toe of the channel bank to stabilize the zone of highest erosion potential and, if necessary, protecting the channel bottom to stabilize degradation. The bank toe will be stabilized by placing ½-ton rock riprap to the height of ordinary high water (bankfull discharge) at that location with a minimum of 2½ feet diameter of rock cut-off wall (shown on the plan and profile plates in this report) (see Figure 8.2). The rock may be in-filled with soil and covered with a biodegradable erosion mat when appropriate. The rock riprap will reduce the flow velocity at the interface with the native bank and will promote natural sedimentation around the rock riprap encouraging naturally occurring revegetation. Rock groins may also be placed to protect erodible bank by directing the flow toward the middle of the channel.

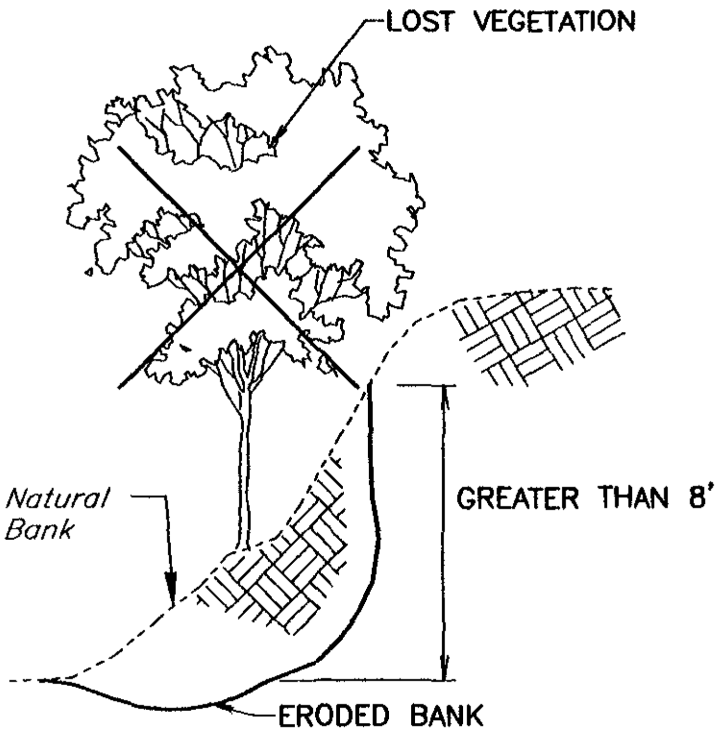
If it is observed that the channel bottom is actively degrading, vortex rock weirs will be installed downstream of the channel erosion to prevent any further degradation (Figures 8.3 and 8.4). All alluvial streams scour during flood events unless the bed is armored with large material. Bank instability and erosion may, in some cases, be directly correlated to increased bank height due to channel bottom degradation.

Vortex rock weirs will be constructed with large boulders 4 to 5 feet in diameter and will be "keyed" into the bank to minimize erosion. The weir is constructed in an arch-shape, with the closed end of the arch facing upstream. This forms a vortex that creates a downstream plunge pool for energy dissipation and aquatic habitat. A low flow channel will be incorporated into the weir. The size of the boulders are designed so that they will not be moved by any expected flow velocity. Vortex rock weirs will be limited to approximately two (2) feet in height above the channel bottom. If more height is needed to stabilize the channel, multiple weirs will be installed.

FIGURE 8.1
SLOPE PROTECTION CONDITIONS



CONDITIONS FOR PREVENTATIVE SLOPE PROTECTION



CONDITIONS FOR REMEDIAL SLOPE PROTECTION

\P\1010. 101\ASIZE\ACXS0004.dwg

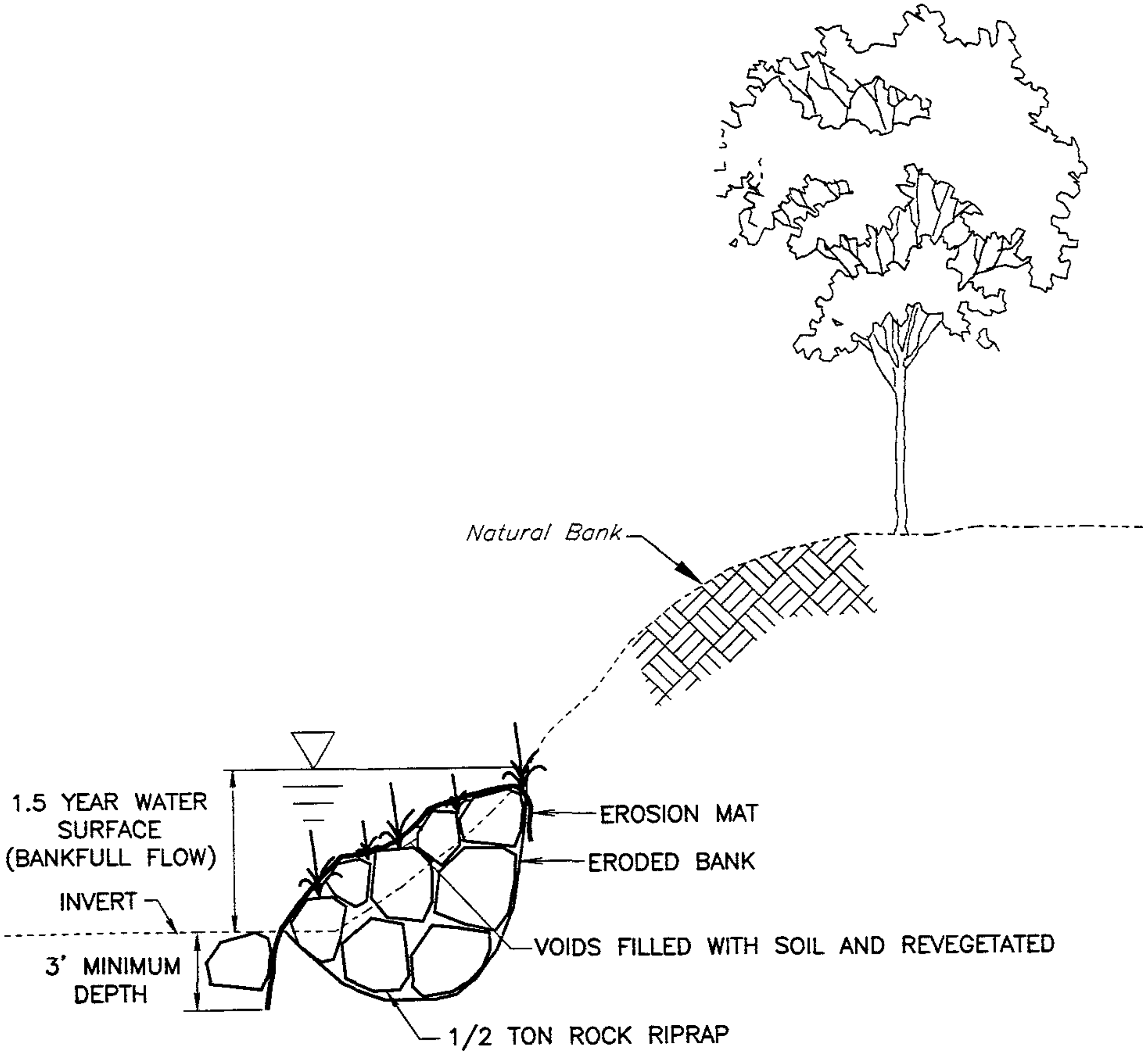
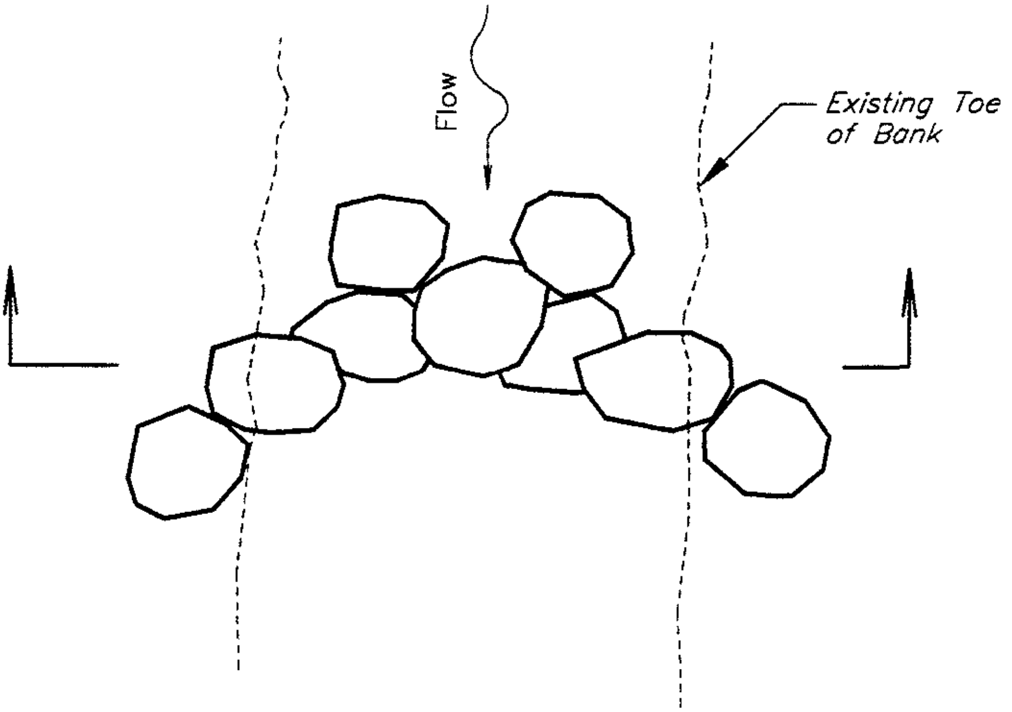
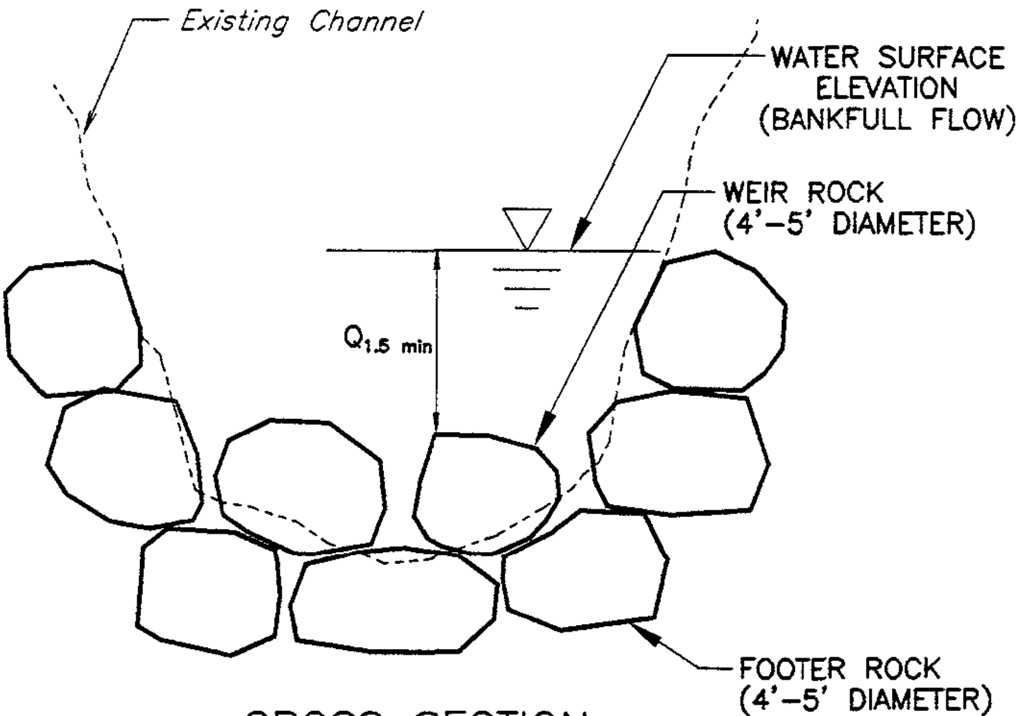

Natural Bank
1.5 YEAR WATER SURFACE (BANKFULL FLOW)
INVERT
3' MINIMUM DEPTH
EROSION MAT
ERODED BANK
VOIDS FILLED WITH SOIL AND REVEGETATED
1/2 TON ROCK RIPRAP

FIGURE 8.2
PREVENTATIVE EROSION SOLUTION



PLAN VIEW


Existing Channel
WATER SURFACE ELEVATION (BANKFULL FLOW)
WEIR ROCK (4'–5' DIAMETER)
$Q_{1.5\ min}$
FOOTER ROCK (4'–5' DIAMETER)

CROSS SECTION

FIGURE 8.4
VORTEX ROCK WEIR

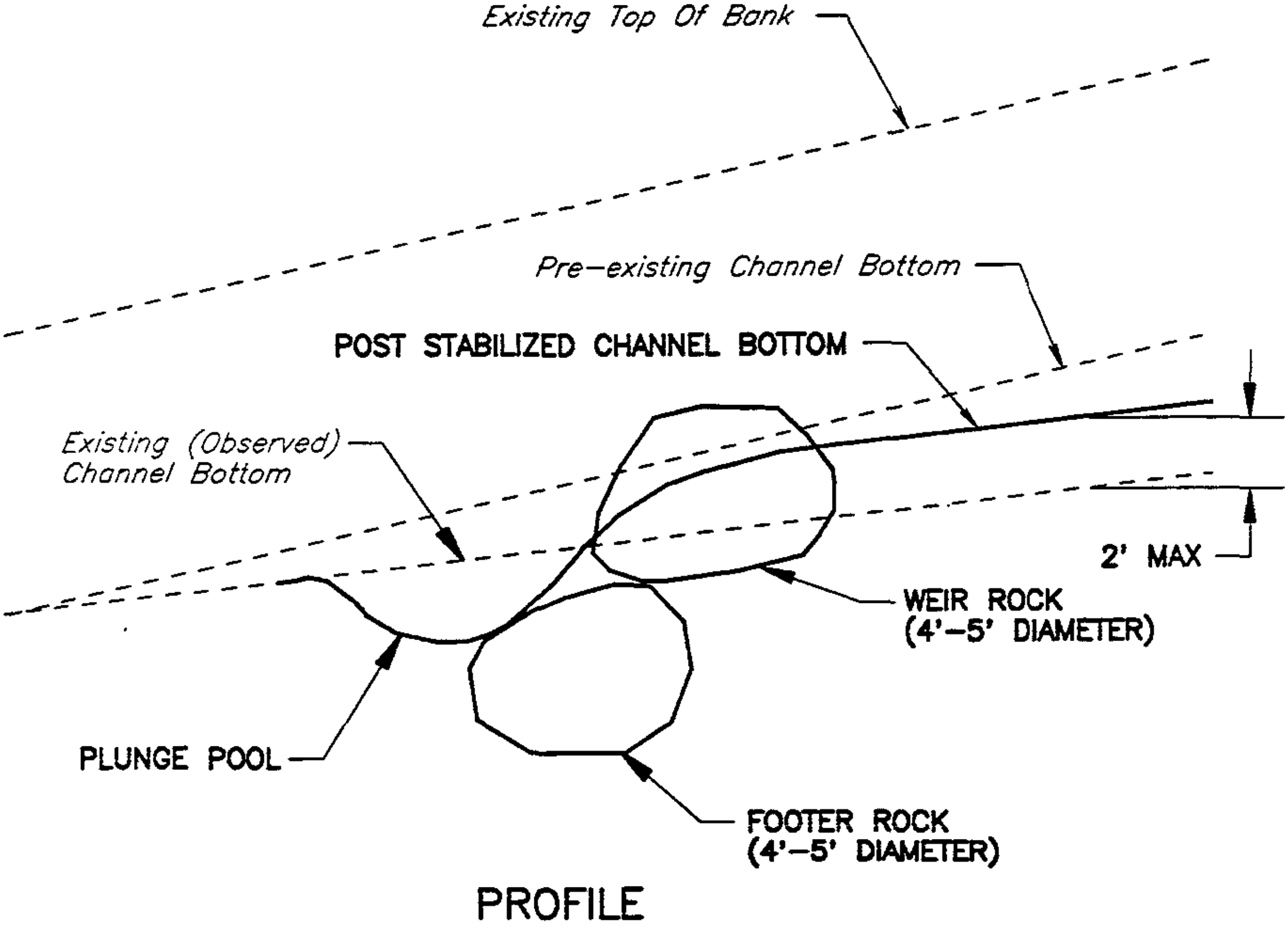

Existing Top Of Bank
Pre-existing Channel Bottom
POST STABILIZED CHANNEL BOTTOM
Existing (Observed) Channel Bottom
2' MAX
WEIR ROCK (4'-5' DIAMETER)
PLUNGE POOL
FOOTER ROCK (4'-5' DIAMETER)
PROFILE

FIGURE 8.3
VORTEX ROCK WEIR

Remedial Slope Protection

Alternatives for remedial slope protection can be divided into three categories: live construction, mixed construction, and armoring (inert) construction. Live construction consists of the traditional methods grasses or live plantings. Mixed construction consists of structural or mechanical methods using plant materials combined with armoring materials (rock riprap, gabions, root wads and boulders, cribwalls, etc.). Armoring construction consists of using only nonplant inert structural methods (sack concrete slope protection, gunite, etc.). Criteria for conditions under which each method is appropriate is outlined below and will be used in planning erosion protection projects to minimize adverse environmental impacts.

The objective when selecting an erosion protection method is to meet engineering requirements and provide the greatest biological enhancement with the least impacts. Engineering requirements involve the physical ability of the material to provide reliable structural support within the site constraints. This includes the ability of the material to provide lateral support to the bank and sustained protection against erosive velocities. Biological enhancement considers the ability of the method to provide opportunity for natural revegetation. Once erosion on the earth channel has occurred, the site constraints determined, cause of erosion determined, and ecological setting evaluated, the erosion protection method and material will be considered and selected.

The methods and materials available for remedial slope protection will be evaluated for consideration **in the order given below**. A summary of the remedial slope protection methods are shown on Table 8.1 at the end of this section.

Live Construction

Live construction consists of traditional methods of planting grasses and plants to control erosion. Vegetation planting methods typically used are cuttings, transplants, live staking, and direct seeding (including hydro-seeding). Plants are chosen to tolerate drought conditions. Biodegradable erosion control materials are frequently used in combination with live construction to assist in plant establishment.

This type of erosion control provides good revegetation potential, but is only effective where bank slopes are 3:1 or flatter and for local channel velocities of 4 feet per second or less.

Mixed Construction

The District utilizes innovative technologies (where appropriate) to repair creekbank erosion. Mixed construction combines structural or mechanical methods using plant materials often combined with inert materials. Sub-categories of Mixed Construction are Soil Bioengineering and Biotechnical Slope Protection.

Soil Bioengineering

Soil Bioengineering refers to the use of plants and plant parts to control soil erosion. Live cuttings and plant parts are imbedded and arranged so that they act as soil reinforcements, hydraulic drains, or barriers to earth movement. Methods included in this subcategory include contour wattling, brush layering, and bank surface matting. While the root systems of these components can increase the "structural integrity" of a streambank with time, their initial value is in protecting the bank surface.

—Contour Wattling

Contour wattling consists of long bundles of plant stems tied together with twine and anchored in shallow trenches with wooden stakes (Figure 8.5). When the stems develop root systems and mature, the plant (typically willows) establishes structural stabilization properties within the soil root structure. Protection from erosive flow velocities result from the protective armoring quality provided by the plant's stems and leaves.

This method, like live construction, provides good revegetation potential, but only applies to situations where bank slopes are 3:1 or flatter and local channel velocities 6 feet per second or less. Most of the study reach has flow velocities greater than 6 feet per second, therefore contour wattling will only be implemented on a limited basis.

—Brush Layering

Brush layering consists of placing live cut branches on the bank and covering them with a lightly compacted layer of soil (Figure 8.6). The tips of the branches extend out of the bank, thus slowing down overbank flow and trapping bank sediment. After the branches take root along their length, they begin to act like horizontal slope drains on the bank.

This method, like live construction, provides good revegetation potential, but applies to situations where bank slopes are 3:1 or flatter, and for relatively low velocities (6 feet per second or less).

—Bank Surface Matting (Erosion Mats)

Bank surface matting (erosion mats) consists of securing plastic, jute, or geotextile fabric surface liners to channel banks using stakes or staples (Figure 8.7). These materials provide soft armor protection against erosive velocities and are combined with live staking or direct seeding. Abrasive sediments and debris will wear, snag, and tear those fabrics with time, potentially undermining the structure. Work best if uniform improved channels with flat bank slopes. Their application is limited similarly to contour wattling by bank slopes of 3:1 or flatter and local channel velocities of 12 feet per second or less. This method has good revegetation potential.

Biotechnical Slope Protection

Biotechnical Slope Protection combines live vegetation with armoring (inert) material to control erosion. Any armoring material that is porous or has openings can lend itself to Mixed Construction by planting it with some type of vegetation.

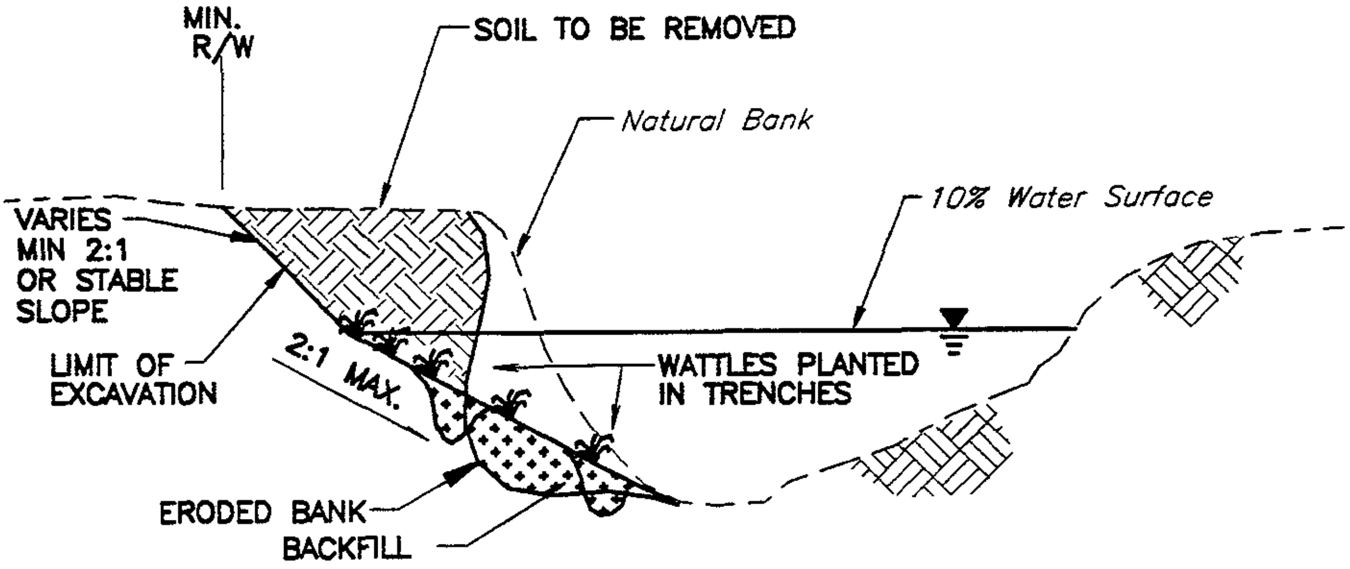


FIGURE 8.5
CONTOUR WATTLING

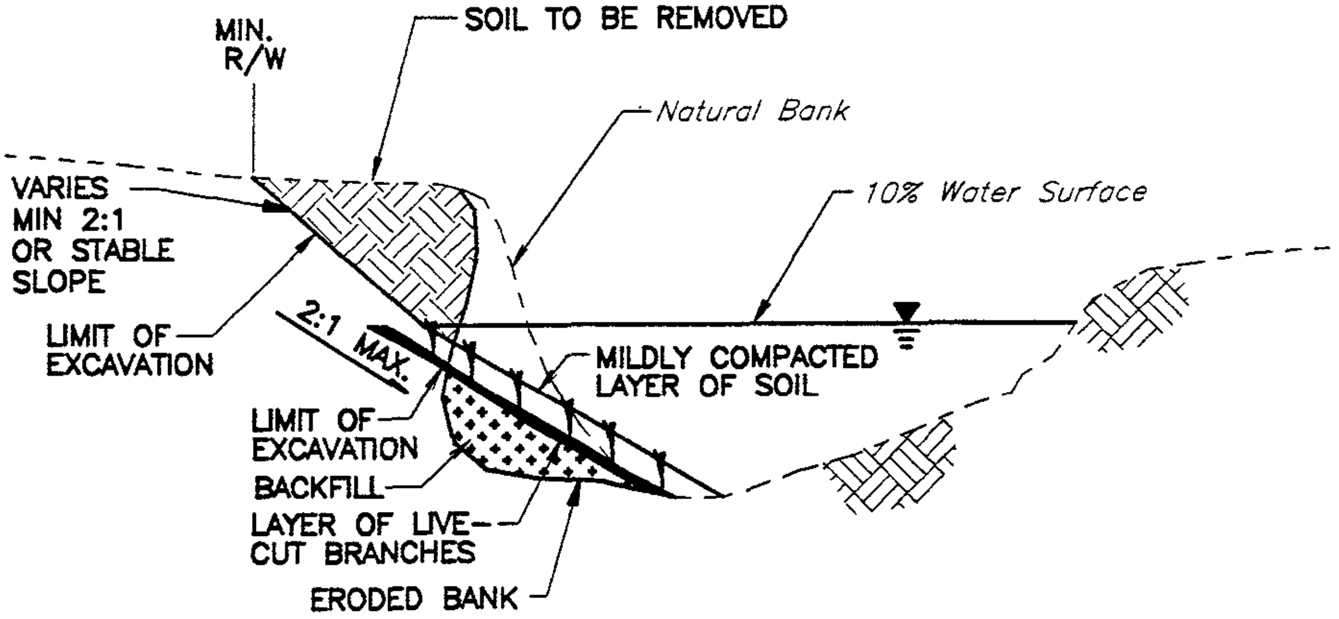


FIGURE 8.6
BRUSH LAYERING

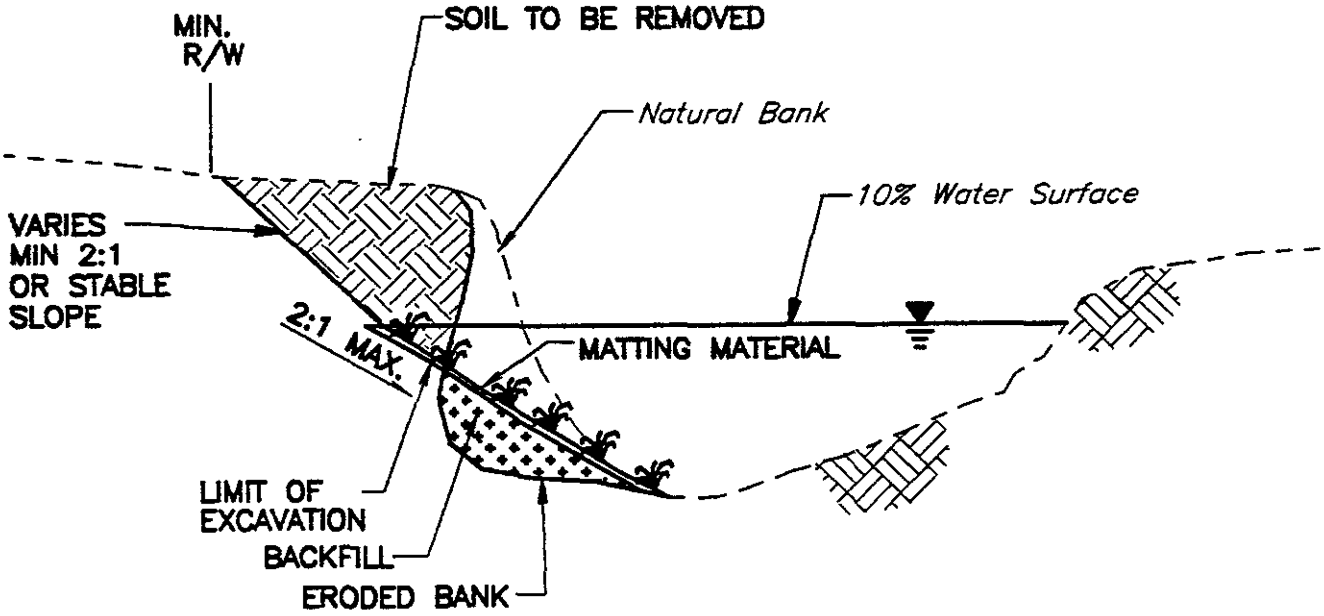


FIGURE 8.7
BANK SURFACE MATTING

—Root Wads and Boulders

The root wads and boulders repair method consists of placing tree root wads and interspersed boulders in eroding bends of the creek (Figures 8.8 and 8.9). The root wads are placed pointing against the flow (upstream) and the boulders (4 to 5 feet in diameter) are placed in between the wads to hold them in place and set the spacing between them. In addition to the boulders, a log called a footer log is used to support the root wad from below and another log is placed over the root wad to hold it from above. The root wads used will have a minimum of 10 feet of tree trunk or bole still attached to the root, with a minimum of 80 percent of the length buried into the creek bank. This tree trunk adds stability to the repair. After the root wads, boulders, and supporting logs are put in place, soil is placed on top, sloped back, and live staked.

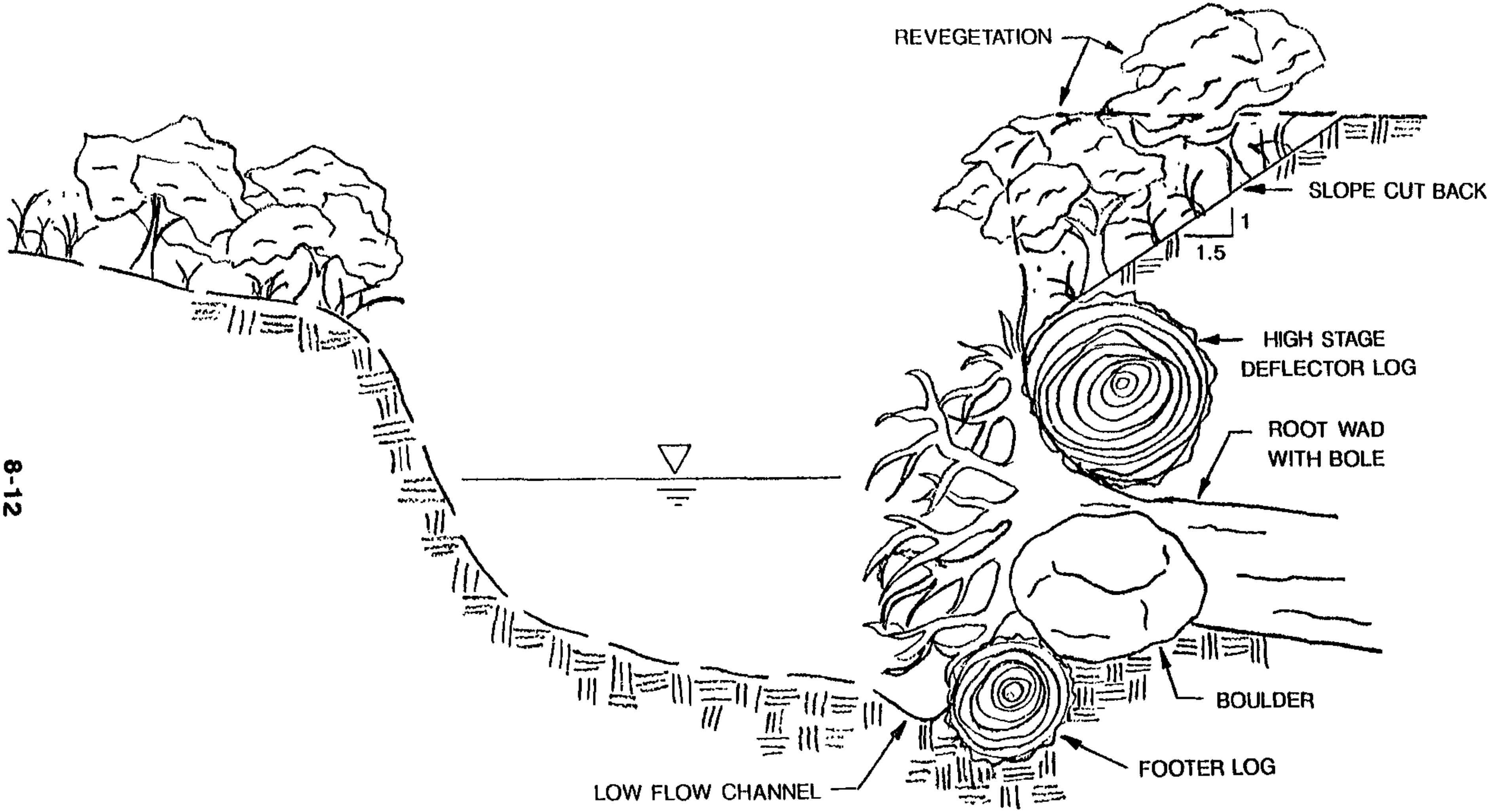
This method requires 80 percent embedment or about 20 feet of depth into the creekbank, horizontally into the bank, for installation. Straight sections and narrow bends of Adobe Creek would not have enough area for installation. When installed correctly, this method can be applied where channel velocities are 6 feet per second or less. The longevity of this method is also governed by the type of trees that are used and the amount of time during the year that they are wet. The maximum decay rate occurs with alternate wetting and drying, or consistently damp conditions. It is unlikely that deciduous woods can be relied on to survive for more than 5 or 10 years. Sufficient anchoring boulders are placed over the root wads such that as the wood decays the boulders can settle and maintain the structural integrity of the embankment.

—Soil Cellular Confinement System

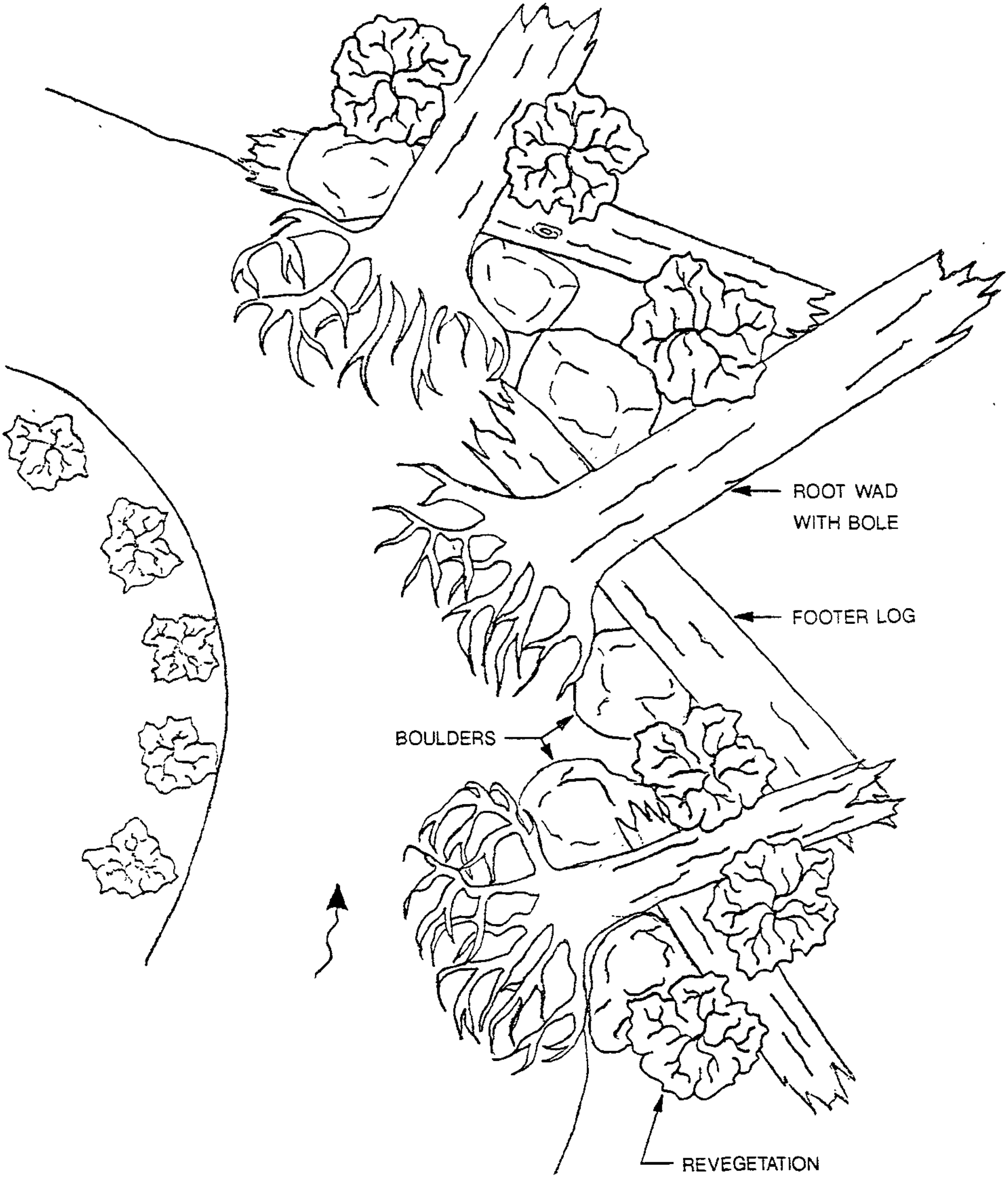
Soil cellular confinement system (geocell) is a polyethylene plastic cellular system where structural strength is developed by the composite design of soil, plant roots, and the plastic cellular configuration (Figure 8.10). This system is available in 8-inch deep honeycomb mats that are installed in offset vertical layers to create terraced planting areas. The honeycomb terrace cells are filled with soil, moderately compacted and planted with woody and herbaceous vegetation to augment structural qualities. This structure functions similar to a crib wall structure.

This material has been used to repair a variety of erosion problems ranging from slopes flatter than 2:1 with velocities less than 4 feet per second, to structural designs on steep slopes (up to 1/2:1) experiencing velocities greater than 6 feet per second. This method has good revegetation potential, but not as good as Live Construction or Soil Bioengineering methods.

Figure 8.8



ROOT WADS AND BOULDERS
TYPICAL CROSS SECTION



ROOT WADS AND BOULDERS

PLAN VIEW

Figure 8.9

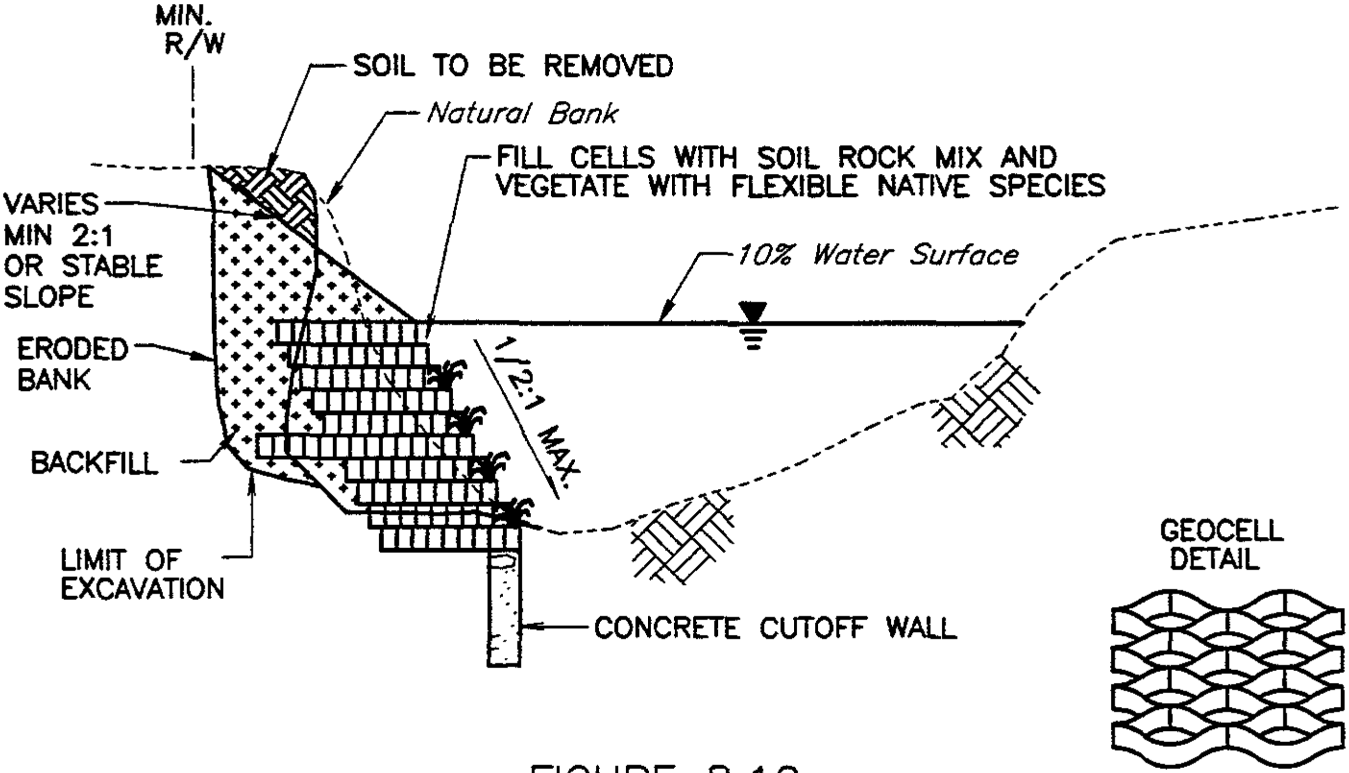


FIGURE 8.10
SOIL CELLULAR CONFINEMENT SYSTEM (GEOCELL)

—Rock Riprap

Erosion is eliminated at the toe and on the bank of the slope by placing rock on the bank (Figure 8.11). Rock sizes can vary from 6 inches to 4 feet in diameter. This method applies to slopes that are 1.5:1 or flatter and flow velocities up to 15 feet per second. Rock selected will be large enough and uniform enough so that soil can be placed between the rocks and planted by live staking or direct seeding. A biodegradable erosion mat may be used over the rock to help vegetation establishment depending on creek conditions at the location of the repair. Angular rock will be used because it tends to interlock making it more stable, making the revetment act like a single structure rather than a collection of independent stones. One advantage of a rock system is flexibility because it can settle and conform to the final streambed contour if scour occurs. Rocks also create habitat by providing refuge from high-flow velocities and creating scour holes.

This method has good revegetation potential, but slightly less than Soil Cellular Confinement System.

—Gabions

Gabions consist of wire baskets filled with rocks and placed on channel banks either as sloping mattresses or stacked in layers that resemble steps (Figure 8.12). This material may be placed at side slopes varying from flatter than 3:1 to as steep as 3/4:1 and requires a concrete, gabion, or rock cutoff wall if no other channel bottom protection is provided. Gabions can withstand channel velocities up to 15 feet per second.

Gabions can be revegetated by leaving pockets without gabions open to bare soil that can be planted with trees or shrubs. This is illustrated in Figures 8.13 and 8.14. Another method for revegetation is accomplished by spreading soil over the gabions so that soil infiltrates between the rocks and then is planted by live staking or direct seeding. Gabions have revegetation potential, but less than rock riprap.

—Articulated Concrete Blocks

ACB consist of concrete interlocking blocks that are cabled together to form mats that can be laid on the channel slope or channel bottom (Figure 8.15). ACB can be laid up to a slope of 1:1 and withstand channel velocities up to 15 feet per second. A cutoff wall made of either concrete or ACB is necessary to anchor ACB to the channel.

ACB is produced in two different styles, open cell and closed cell. The open cell style would be used for mixed construction and can be planted by live staking and direct seeding (reinforced grass). Plant growth is restricted by the size of the cell opening, and therefore revegetation potential is limited.

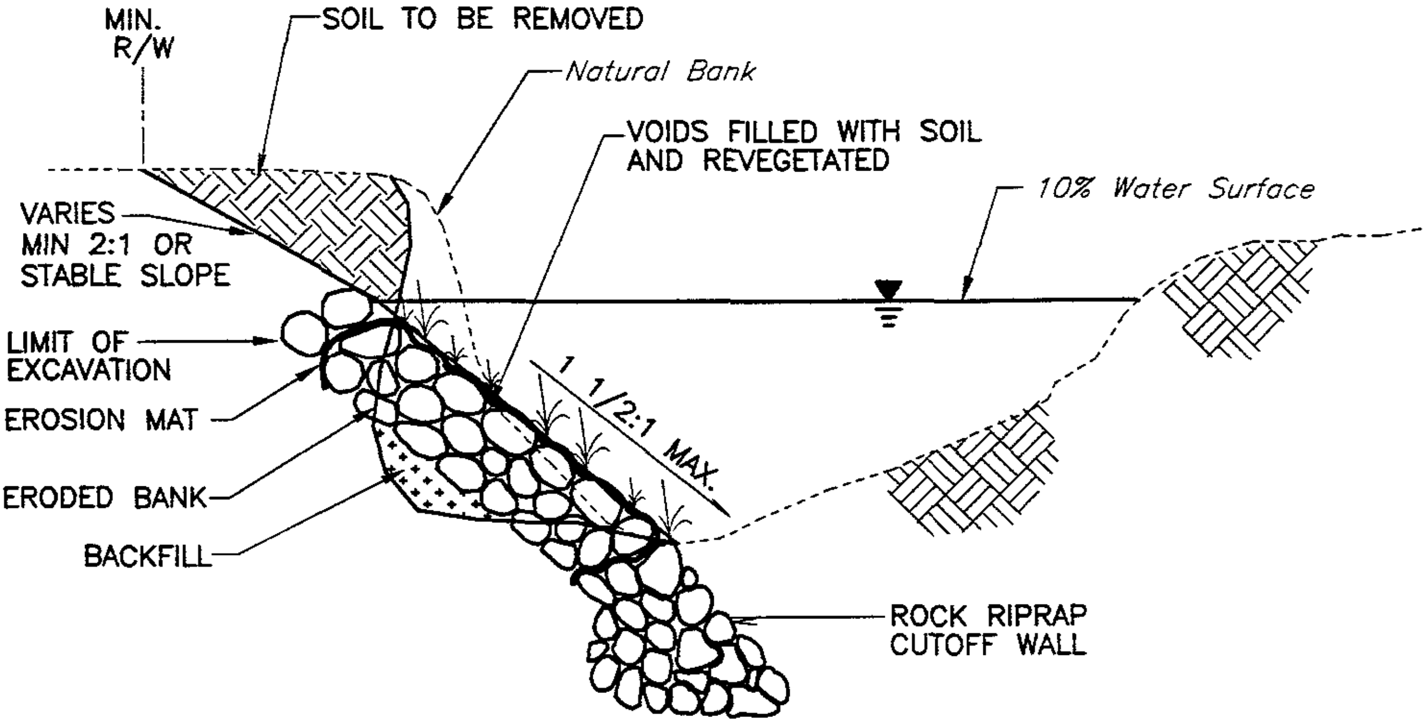


FIGURE 8.11
ROCK RIPRAP

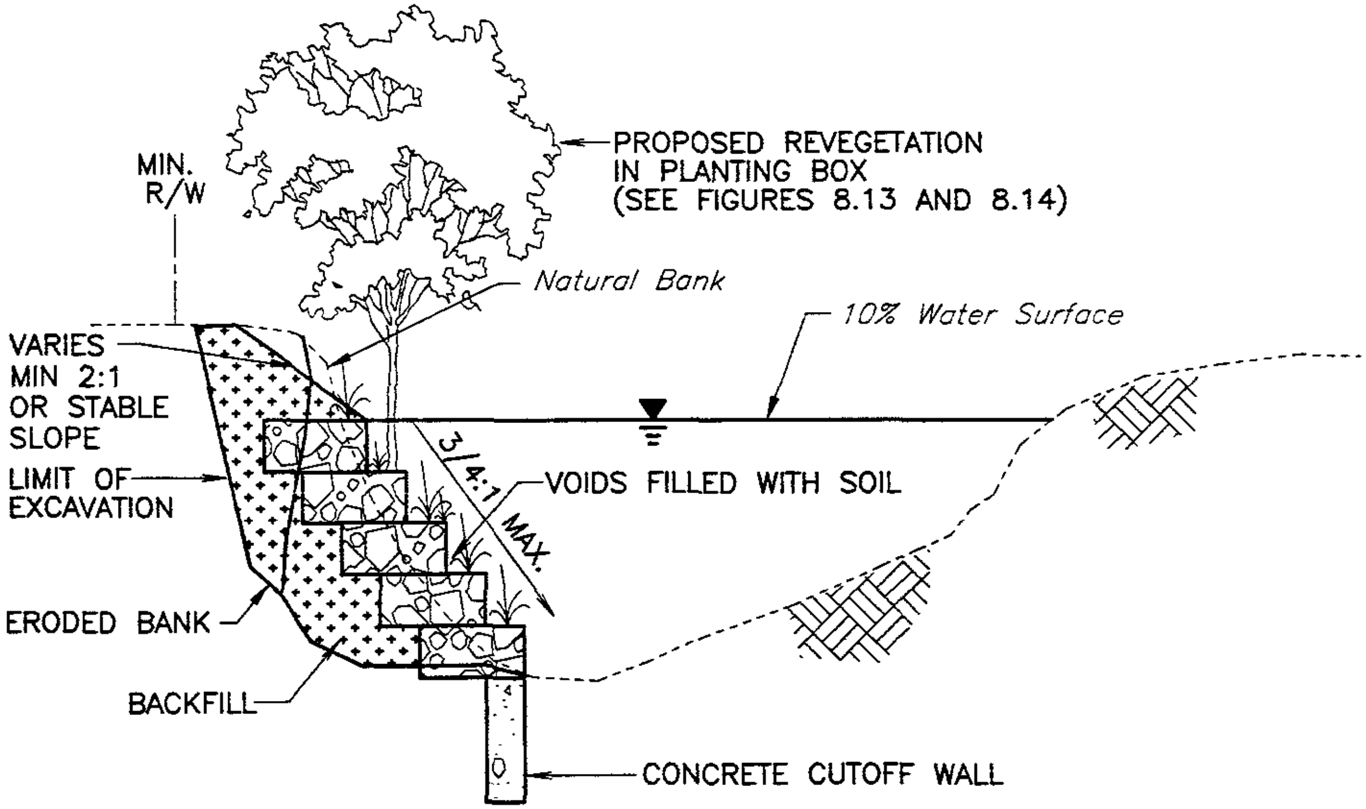


FIGURE 8.12
GABIONS

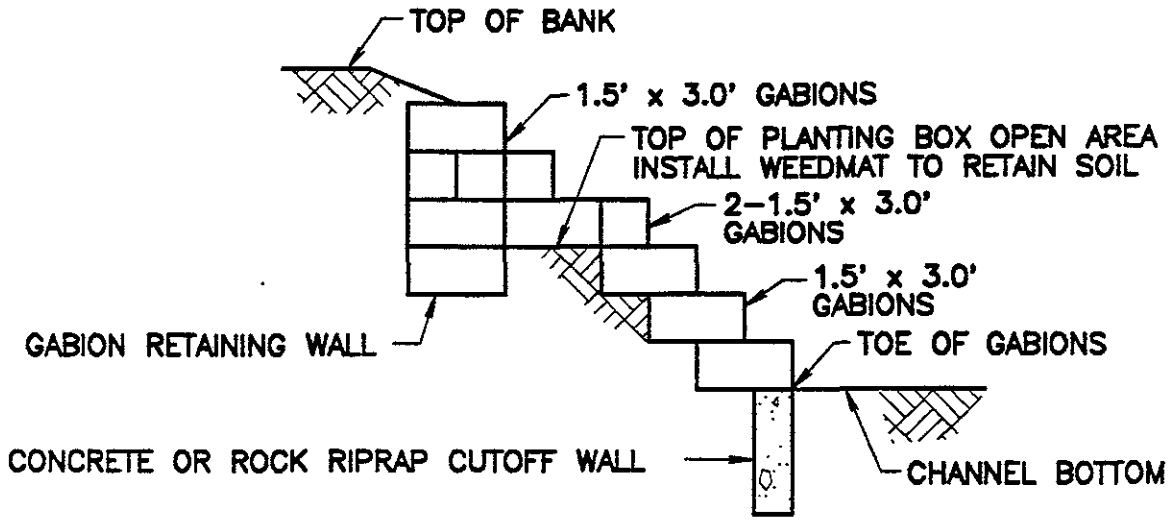


FIGURE 8.13
GABION PLANTING BOX SECTION
NTS

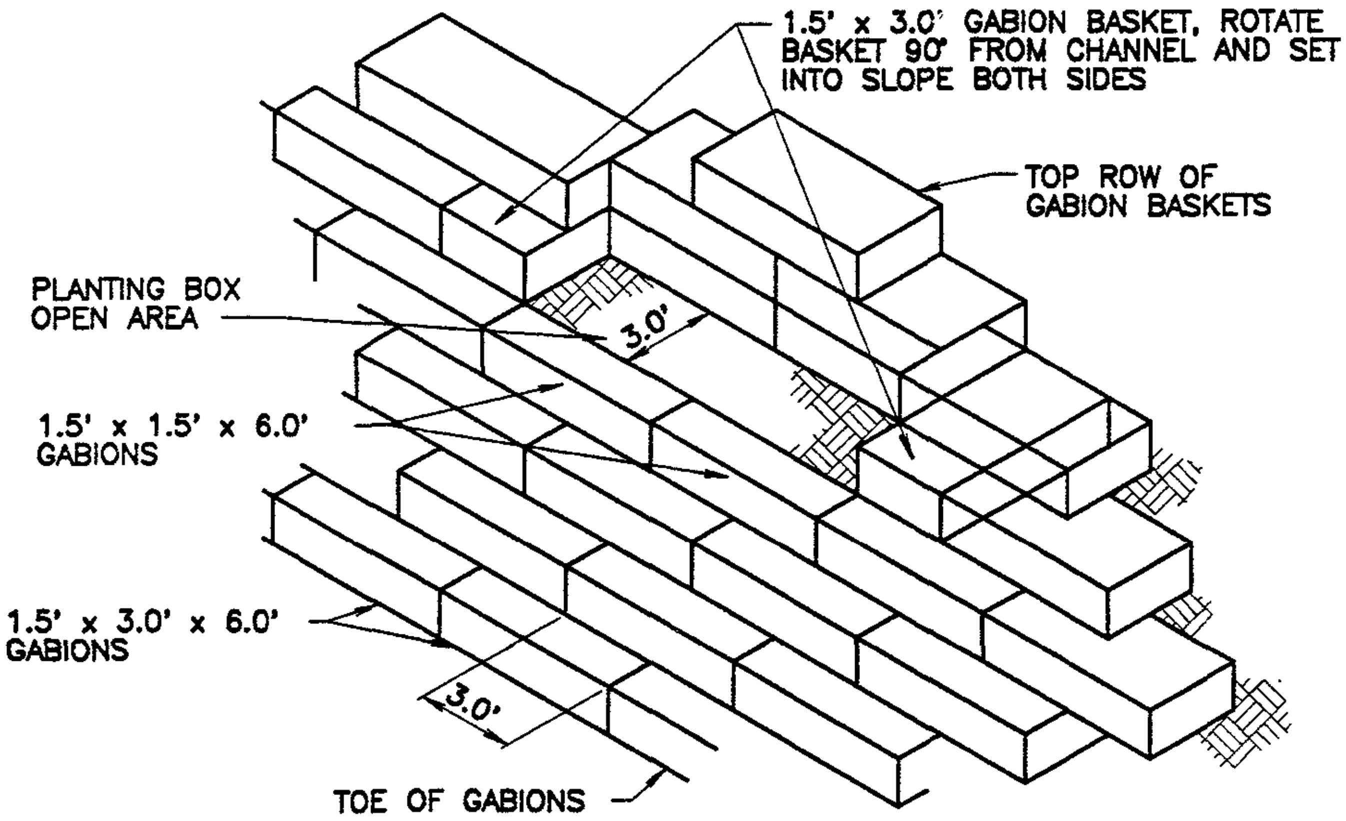

1.5' x 3.0' GABION BASKET, ROTATE BASKET 90° FROM CHANNEL AND SET INTO SLOPE BOTH SIDES
TOP ROW OF GABION BASKETS
PLANTING BOX OPEN AREA
3.0'
1.5' x 1.5' x 6.0' GABIONS
1.5' x 3.0' x 6.0' GABIONS
3.0'
TOE OF GABIONS

FIGURE 8.14
GABION PLANTING BOX DETAIL
NTS

—Crib Walls

Crib walls consist of stacked interlocking concrete frames that form a retaining wall (Figure 8.16). The structural strength is developed by the composite design of a concrete frame with compacted backfill. Crib walls can be sloped up to ¼:1 and can withstand velocities up to 15 feet per second. Crib walls can be constructed with open face panels that are planted by live staking. Like ACB, crib walls restrict plant growth by the size of the panel opening, and therefore revegetation is limited.

Armoring (Inert) Construction

Inert Construction consists of the sole use of hard armoring materials to protect an eroding channel bank. This type of construction has been widely used in the past due to its predictable properties, ease of installation, availability, and familiarity. These materials have no revegetation potential, and will only be applied after both Live Construction and Mixed Construction are found to not be feasible.

Sacked Concrete Slope Protection

Sacked concrete slope protection (SCSP) consists of burlap bags filled with concrete and placed on channel banks (Figure 8.17). SCSP can be placed up to ½:1 side slope and requires a concrete or sacked cutoff wall at the toe of the bank. SCSP can withstand velocities up to 15 feet per second. Although SCSP does not provide any revegetation potential, it can be contoured to avoid trees and create planting wells.

Gunite

Gunite is an air blown sand, cement, and water mixture placed directly on eroding channel banks (Figure 8.18). Its application permits near vertical side slopes and can withstand flow velocities up to 15 feet per second. Like SCSP, Gunite does not provide any revegetation potential, but it can be contoured to avoid trees and create planting wells.

A summary of all of the remedial slope protection methods is shown on Table 8.1.

Vortex rock weirs will also be installed as a remedial slope protection measure if channel degradation is causing bank erosion or if channel degradation threatens existing channel structures, existing erosion protection, or adjacent private improvements. Vortex rock weir materials will be constructed as described in the Preventative Slope Protection section (see Figures 8.3 and 8.4). Vortex rock weir construction will be considered as an alternative to bank slope protection or installed, where needed, in conjunction with slope protection.

Both channel bank and bottom protection need to be designed for each specific site. Examples of details that should be designed are (but not limited to): size of rock, thickness of rock, depth and configuration of gabions, depth of gabion cutoff wall, and geocell anchor schedule.

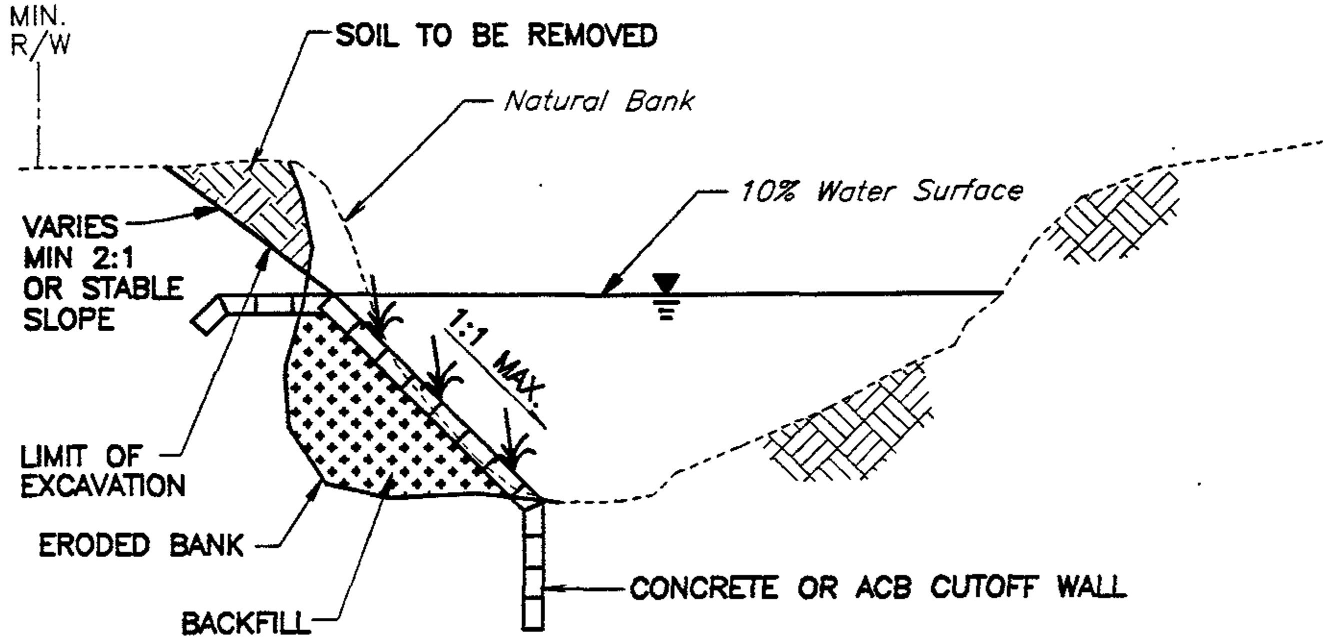


FIGURE 8.15
ARTICULATED CONCRETE BLOCK (ACB)

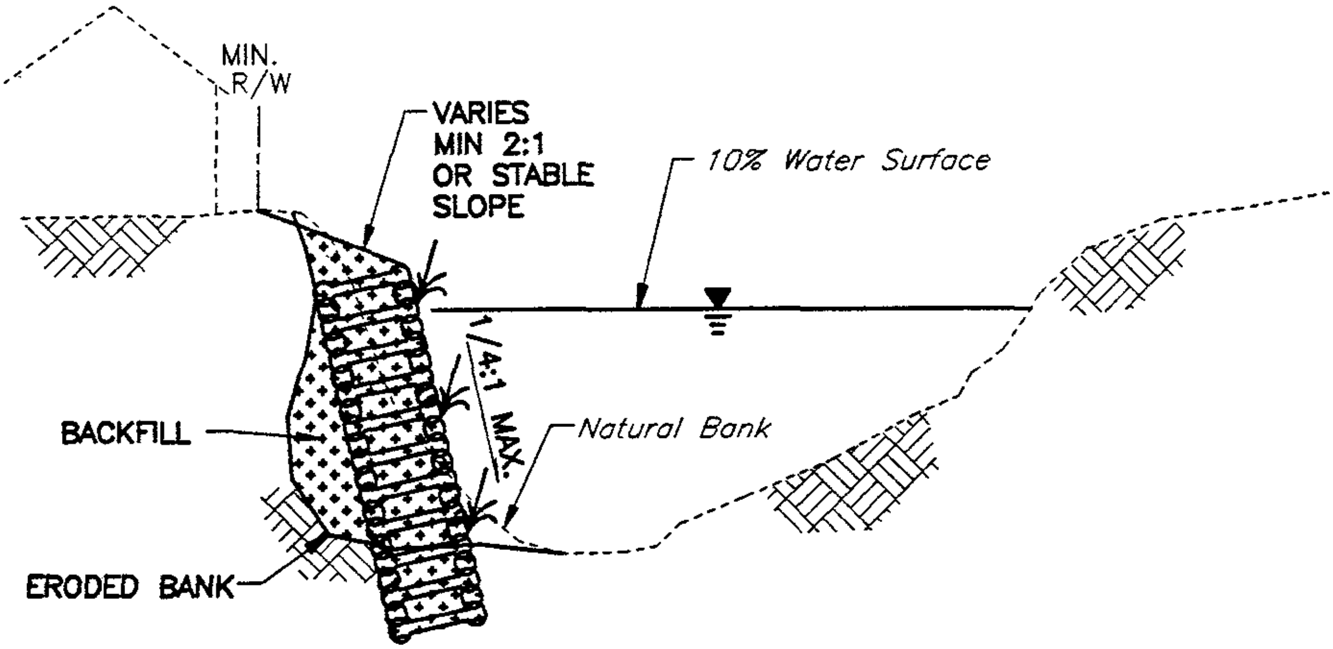


FIGURE 8.16
CRIB WALLS

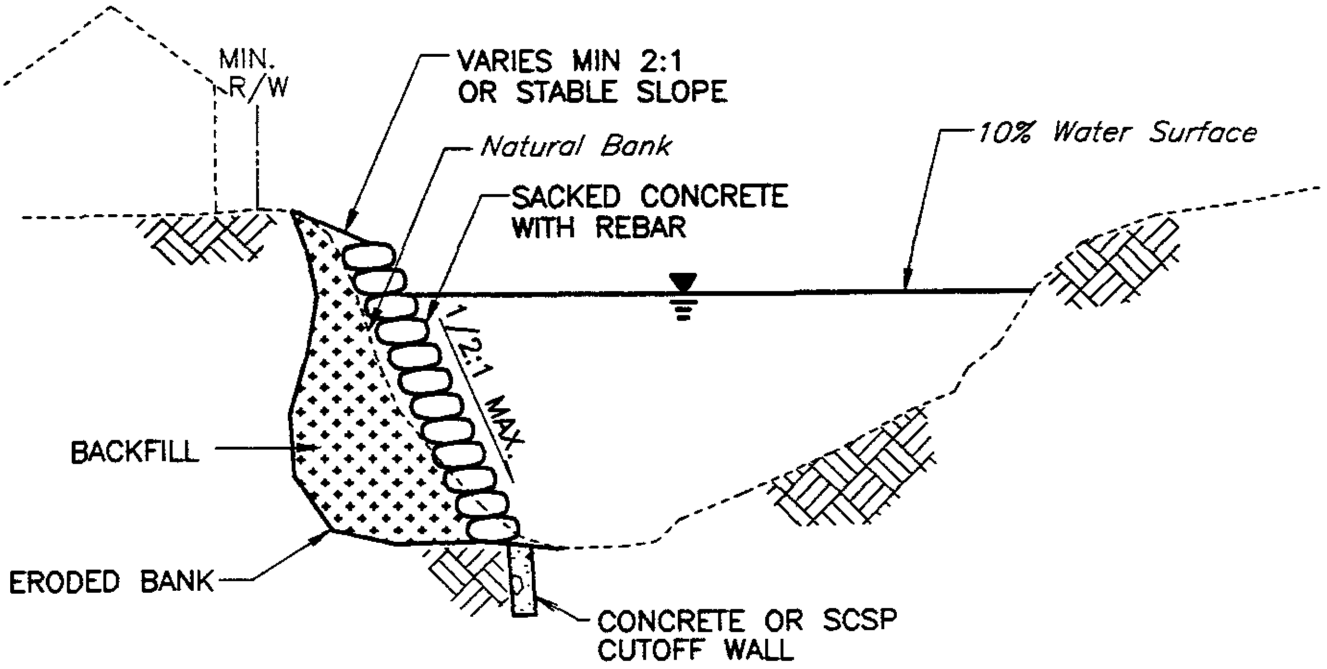


FIGURE 8.17
SACKED CONCRETE

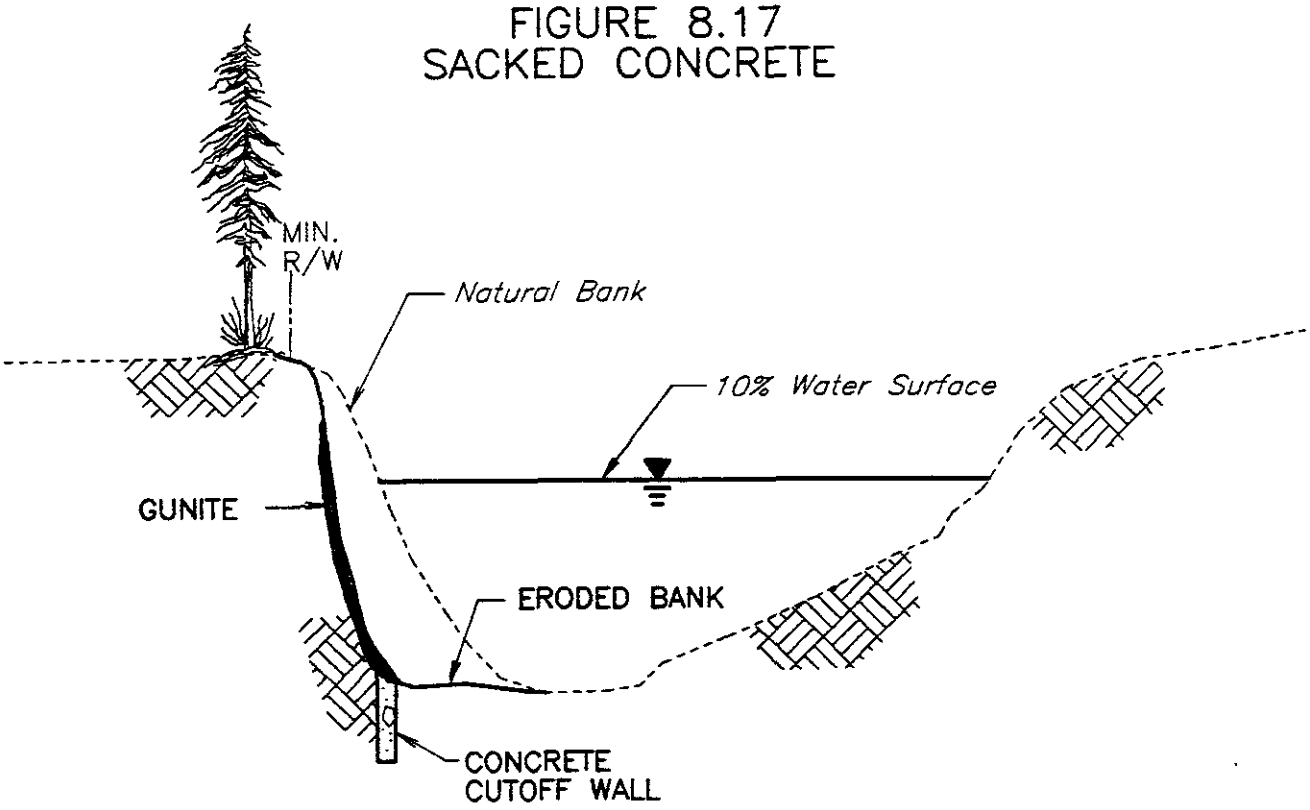


FIGURE 8.18
GUNITE

TABLE 8.1
Summary of Remedial Slope Protection Methods

Erosion Control Technique				
Category	**Method**	**Slope Requirements**	**Flow Velocity Requirements**[1]	**Additional Information**
Live construction	Planting grasses, cuttings, transplants, live staking, seeding	3:1 or flatter	4 fps[1] or less	Not feasible on Adobe Creek due to excessive channel velocities. Use on slope above 1.5-year water surface.
Mixed construction—soil bioengineering	Contour wattling	3:1 or flatter	6 fps or less	Plant roots protect soil. Creates benches or terraces to create flat areas. Limited use due to high creek velocities. Use on slope above 1.5-year water surface.
	Brush layering	3:1 or flatter	6 fps or less	Similar uses and restrictions to contour wattling. Requires large quantity of material.
	Bank surface matting	3:1 or flatter	12 fps or less	May be combined with live staking or direct seeding. Erosion matting is used to provide structure for plant growth. Requires maintenance and replanting to insure performance. Similar uses and restrictions to contour wattling. Best on uniform channel slopes.
Mixed construction—biotechnical slope protection	Root wads and boulders	Varies	10 fps or less	For use on the outside of eroding bends. Approximately 20 feet of horizontal depth into bank is needed for installation.
	Soil cellular confinement system (structural design)	½:1 or flatter	6 fps or less	Cells are filled with soil and planted with vegetation. Matrix is not biodegradable.
	Rock riprap	1½:1 or flatter	15 fps or less	May be used for preventative as well as remedial protection. May be combined with live staking or direct seeding.
	Gabions	¾:1 or flatter	15 fps or less	Can be planted but vegetation potential is limited.
	Articulated concrete blocks	1:1 or flatter	15 fps or less	Can be planted with live staking or direct seeding. Plant growth is restricted to size of cell openings.
Mixed construction—biotechnical slope protection	Crib walls	¼:1 or flatter	15 fps or less	Crib walls restrict plant growth due to size of openings. Use soil bioengineering above cribwall.
Armoring (Inert) construction	Sacked concrete slope protection	½:1 or flatter	15 fps or less	No revegetation potential.
	Gunite	All slopes to vertical	15 fps or less	No revegetation potential.

---

[1] fps = feet per second local velocities, if unknown use 1.5* average velocity

When possible, slope protection will be installed without excavating into the existing eroding bank. Slope protection will match the upstream and downstream channel section by reestablishing the pre-erosion bank slope. This practice will eliminate impacts to existing vegetation and prevent erosion downstream. Proposed slope protection will be placed up to the 10 percent water surface elevation unless it is done as a preventative measure. Slope protection can be placed above the 10 percent water surface elevation if the existing site conditions warrant it. An example of this situation would be a house located at the top of the creek bank. The protection height will be determined on a case-by-case basis by District maintenance personnel.

If the selected slope protection method exceeds the space created by the bank erosion, one of the two following construction approaches can by applied: (1) excavate into the existing bank, or (2) move the center of the channel further away from the eroding bank.

1. A 2:1 minimum slope will be excavated back from the top of the slope protection where the District has ample right of way and no valuable native vegetation will be impacted (Figure 8.19). This procedure will establish a stable slope above the 10 percent water surface and will allow the District to replant native vegetation on the upper bank.

   A slope will not be excavated from the top of the slope protection where there is either insufficient right of way, structures, or valuable native vegetation that would be impacted (Figure 8.20). This approach protects the lower bank from further erosion, but allows the upper bank to find its own stable condition naturally without disturbing existing conditions.

2. If a point bar has developed on the bank opposite the eroded bank, then it could be excavated to reestablish a channel alignment that is closer to the opposite bank (Figure 8.21). Available right of way and existing vegetation would also need to be evaluated for this approach.

In any case, the channel bottom will **not** be narrowed beyond the upstream and downstream conditions. Narrowing the channel could cause channel bottom degradation, downstream erosion, and upstream increased water surface. If neither of the two above alternatives can be applied, another slope protection method will be considered.

Erosion protection measures protect for a finite period of time before deteriorating. Therefore, the District will repair existing erosion protection as necessary. If existing erosion protection completely fails, the District will reevaluate the site for alternative methods of protection before reconstruction.

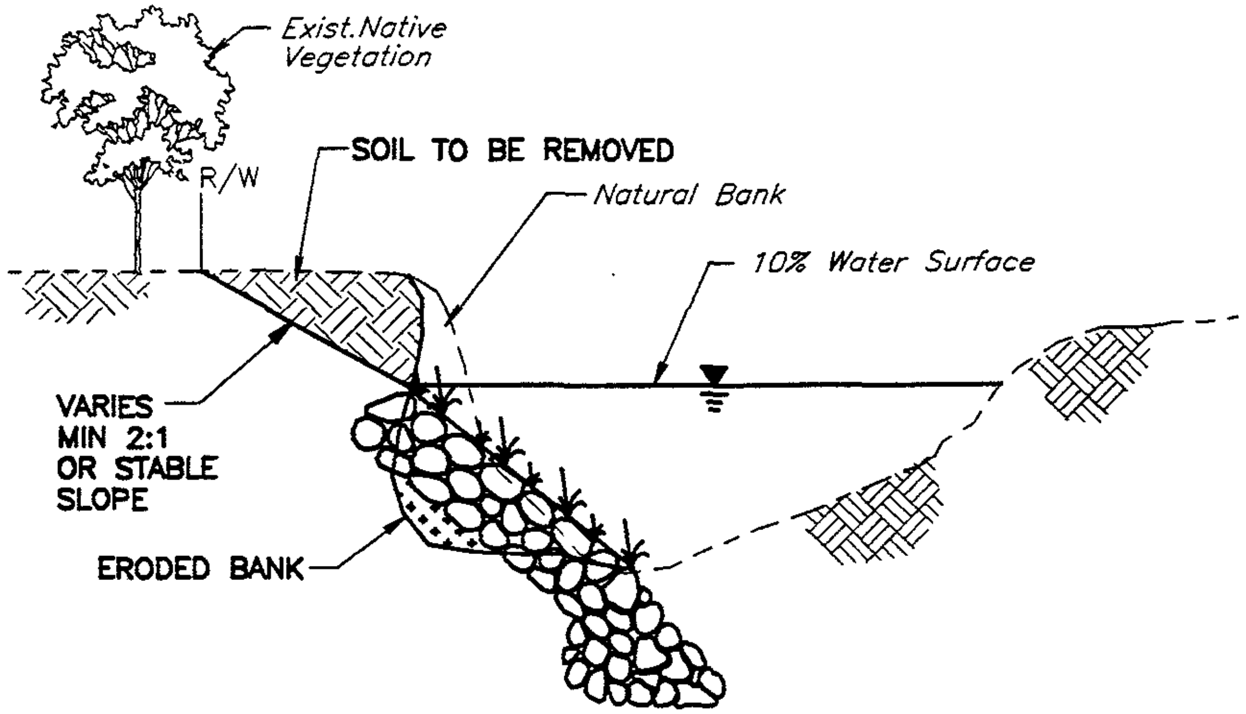


FIGURE 8.19
SLOPE CUTBACK
(ROCK RIPRAP AS EXAMPLE OF REMEDIAL SLOPE PROTECTION)

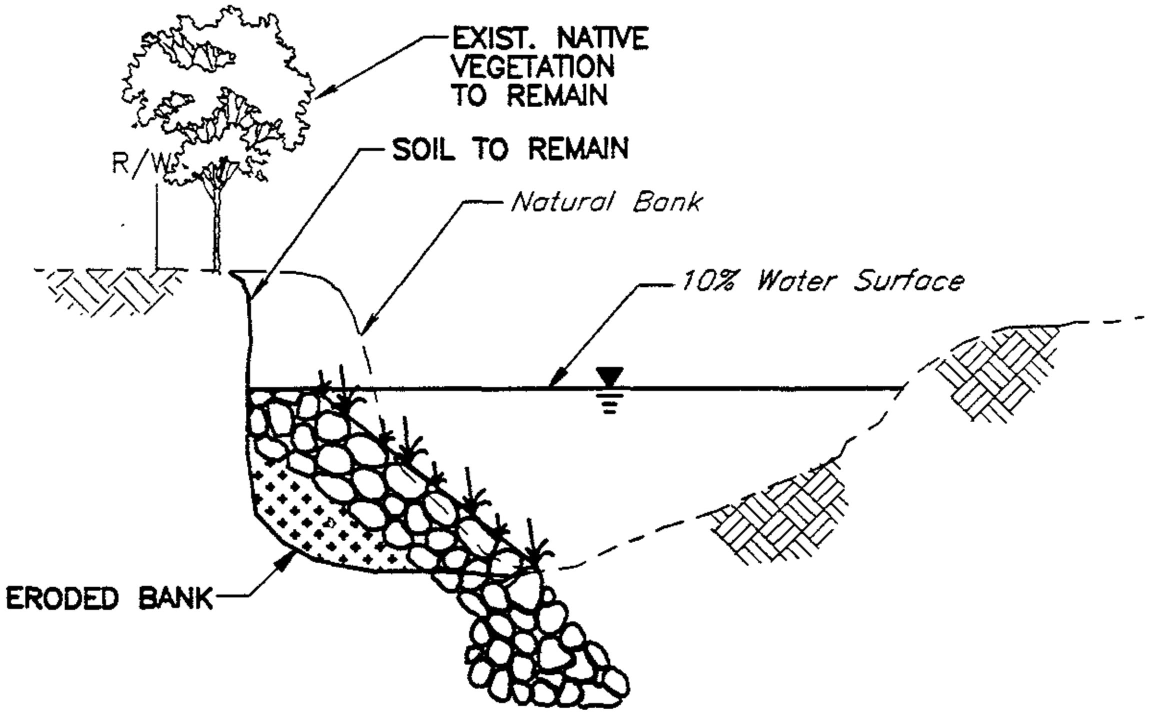


FIGURE 8.20
NO SLOPE CUTBACK
(ROCK RIPRAP AS EXAMPLE OF REMEDIAL SLOPE PROTECTION)

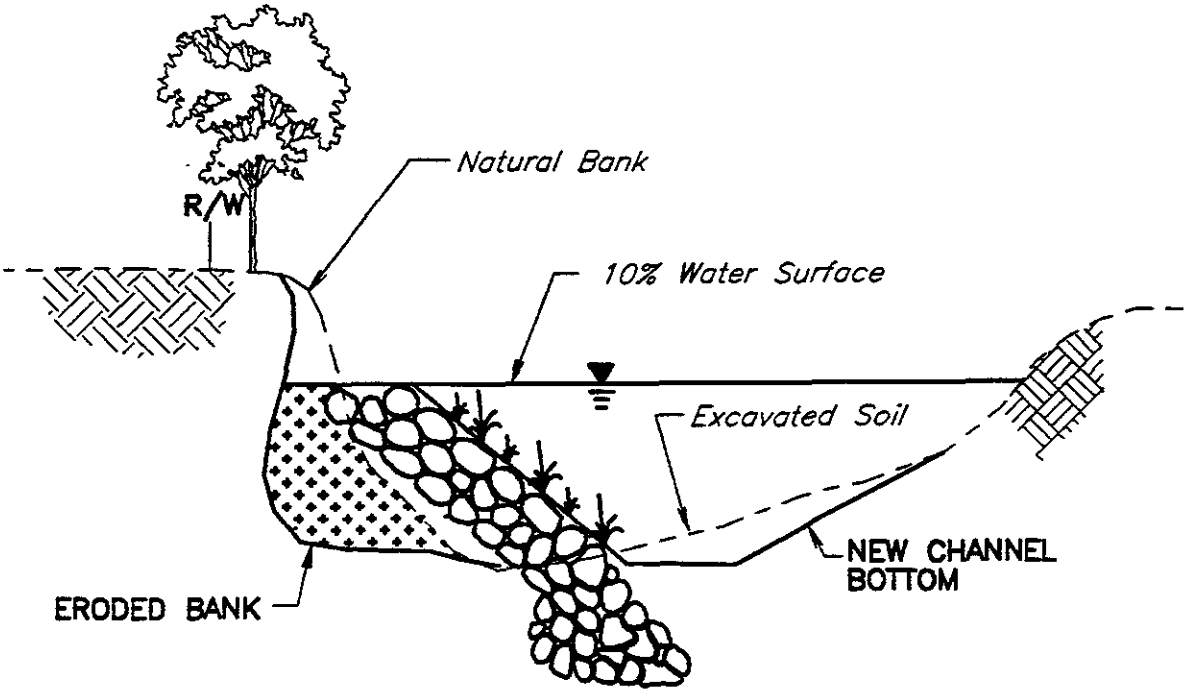


FIGURE 8.21
CHANNEL BOTTOM REALIGNMENT
(ROCK RIPRAP AS EXAMPLE OF REMEDIAL SLOPE PROTECTION)

Vegetation and Sediment Removal

Vegetation and sediment will be removed only if they cause an obstruction to flow. Whether the obstruction is due to vegetation, sediment, or debris, removal is initiated upon recognition that the channel capacity is compromised.

In unmodified channel sections, vegetation may be removed by hand labor, mechanical means, and/or aquatic herbicides from toe to toe of both banks (see Maintenance Standards, Table 8.2). In modified channel sections, vegetation may be removed by hand labor, mechanical means, and/or aquatic herbicides to the design height above the channel (see Maintenance Standards, Table 8.2). All Aquatic Herbicides used have been approved by California Department of Pesticide Regulations (formerly CAL EPA) and are applied by a state licensed vegetation technician.

In the vicinity of hydraulic structures, obstructions to flow such as accumulated vegetation, sediment, and debris will be removed. Hydraulic structures include bridges, culverts, outfall structures, bypass structures, and drop structures.

When it is necessary to take maintenance vehicles into modified channels, the drop structures would be covered with gravel to allow passage of vehicles without damage to the structure or the vehicle. This gravel would be removed at the conclusion of the maintenance activities.

Fallen trees and debris obstructing flow will be removed along Adobe Creek as necessary where the District has right of way. Vegetation on maintenance roads and ramps will be controlled by hand labor, herbicides, or mechanical means.

MAINTENANCE ACTIVITIES OUTLINED BY REACH

The following are maintenance activities, in addition to the above activities, that are specific to certain sections of Adobe Creek:

Reaches 1 to 4 (El Camino Real to Foothill Expressway)

- Annual maintenance activities may include removal of large debris and fallen trees obstructing flow and construction and repair of erosion protection measures.
- Periodic maintenance activities may include removal of vegetation and sediment in the waterway as described in the Maintenance Standards, Table 8.2. Concrete structures at El Camino Real and Yerba Buena will be inspected for abrasion and restored as necessary. Structural repair practices are outlined in Table 8.2.
- Channel access will be from ramps located at El Camino Real, at Alta Mesa Cemetery, and from District-owned property adjacent to Foothill Expressway.
- Only noninvasive erosion repair methods (no excavation) will be used in Reach 1 by resident request.

Reaches 5 to 6 (Foothill Expressway to Burke Road)

- Annual maintenance activities may include removal of large debris and fallen trees obstructing flow, construction and repair of erosion protection measures, and repair of damaged gabion baskets.
- Periodic maintenance activities may include removal of vegetation and sediment in the waterway as described in the Maintenance Standards, Table 8.2. Concrete structures at Foothill Expressway and West Edith Avenue will be inspected for abrasion and restored as necessary.
- Channel access will be from ramps located downstream of Foothill Expressway and downstream of the West Edith Avenue bridge.

Reaches 7 to 9 (Burke Road to Interstate 280)

- Annual maintenance activities may include removal of large debris and fallen trees obstructing flow, construction and repair of erosion protection measures, and repair of damaged gabion baskets.
- Periodic maintenance activities may include removal of vegetation and sediment in the waterway as described in the Maintenance Standards, Table 8.2. Concrete structures at Burke Road, Manresa Way, and O'Keefe Road will be inspected for abrasion and restored as necessary.
- Channel access will be from a ramp located upstream of Manresa Way.

Reaches 10 to Entrance of Bypass Channel

- Annual maintenance activities may include removal of large debris and fallen trees obstructing flow, construction and repair of erosion protection measures, and repair of damaged gabion baskets.
- Periodic maintenance activities may include removal of vegetation and sediment in the waterway as described in the Maintenance Standards, Table 8.2. Concrete structures along this entire reach will be inspected for abrasion and restored as necessary.
- Channel access will be from a ramp located upstream of the culverts at the Foothill College Entrance Road.

Entrance of Bypass Channel to End of the District's Jurisdiction

- Annual maintenance activities may include removal of large debris and fallen trees obstructing flow, construction and repair of erosion protection measures, and repair of damaged gabion baskets.
- Periodic maintenance activities may include removal of vegetation and sediment in the waterway as described in the Maintenance Standards, Table 8.2. Concrete structures at Tepa Way, the bypass entrance, and Rhus Ridge Road will be inspected for abrasion and

restored as necessary. The rock-lined modified section of creek in the Adobe Creek Estates subdivision will be inspected for erosion and repaired as necessary.

- Channel access will be at the entrance to the bypass channel from a District easement off of Moody Road.

MAINTENANCE STANDARDS

Acceptable maintenance limits are based on Adobe Creek design conditions. For modified creek sections, maximum levels of sediment and vegetation will be allowed within the flow area as long as the 1 percent design capacity is not exceeded. For unmodified creek sections or sections without proposed modifications, maximum levels of sediment and vegetation will be allowed within the flow area as long as it does not obstruct flow or prohibit the creek from being self-cleaning. These maximum levels are called acceptable maintenance limits and are listed in Table 8.2.

TABLE 8.2
Adobe Creek—El Camino Real to End of Project Maintenance Standards for Vegetation and Sediment Removal

Facility Type	Maintenance Issue	Acceptable Maintenance Limit	Performance Criteria
Reaches 1 Through 4: El Camino Real to Foothill Expressway			
Unmodified Channel	Sediment accumulation	3.0-foot sediment depth	Remove sediment from channel bottom
	Woody vegetation	Woody vegetation occupies entire channel bottom	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel
Culverts	Concrete surface abrasion	Abrasion of 2 inches	Resurface
	Sediment accumulation	1.5-foot sediment depth	Remove sedimentation
All	Vegetation on roads or ramps	Present	Remove by mechanical means and aquatic herbicides to edge of road or ramp
	Vegetation overhanging roads or ramps	Present	Cut back overhanging vegetation to edge of road or ramp to a height of 12 feet
	Obstructions to flow	Present	Remove fallen trees and debris

TABLE 8.2
Adobe Creek—El Camino Real to End of Project
Maintenance Standards for Vegetation and Sediment Removal
(continued)

Facility Type	Maintenance Issue	Acceptable Maintenance Limit	Performance Criteria
Reaches 5 Through 6: Foothill Expressway to Burke Road			
Gabion/rock-lined channel at West Edith Avenue	Sediment accumulation	1.5-foot sediment depth (to top of first row of gabions)	Remove sediment from channel bottom
	Rock lining repair	Erosion of rock lining to subgrade material	Replace rock lining to original condition
	Woody vegetation	Woody vegetation occupies entire channel	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel and 4± feet up gabion bank
	Gabion repair	Break in gabion wire	Restore gabion basket to original condition
	Vegetation in open space area	Height of tallest vegetation 4 feet high	Remove vegetation within open space area to a height of 1 foot or less and chemically treat stumps
	Nonnative vegetation in revegetation area	Present	Remove by hand labor and approved herbicides

TABLE 8.2
Adobe Creek—El Camino Real to End of Project
Maintenance Standards for Vegetation and Sediment Removal
(continued)

Facility Type	Maintenance Issue	Acceptable Maintenance Limit	Performance Criteria
Reaches 5 Through 6: Foothill Expressway to Burke Road			
Unmodified channel	Sediment accumulation	3.0-foot sediment depth	Remove sediment from channel bottom
	Woody vegetation	Woody vegetation occupies entire channel bottom	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel
Culverts	Concrete surface abrasion	Abrasion of 2 inches	Resurface
	Sediment accumulation	1.5-foot sediment depth	Remove sediment
All	Vegetation on roads or ramps	Present	Remove by mechanical means and aquatic herbicides to edge of road or ramp
	Vegetation overhanging roads or ramps	Present	Cut back overhanging vegetation to edge of road or ramp up to a height of 12 feet
	Obstructions to flow	Present	Remove fallen trees and debris

TABLE 8.2
Adobe Creek—El Camino Real to End of Project
Maintenance Standards for Vegetation and Sediment Removal
(continued)

Facility Type	Maintenance Issue	Acceptable Maintenance Limit	Performance Criteria
Reaches 7 Through 9: Burke Road to Interstate 280			
Gabion/rock-lined channel at Manresa Way	Sediment accumulation	1.5-foot sediment depth (to top of first row of gabions)	Remove sediment from channel bottom
	Rock lining repair	Erosion of rock lining to subgrade material	Replace rock lining to original condition
	Woody vegetation	Woody vegetation occupies entire channel bottom	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel
	Gabion repair	Break in gabion wire	Restore gabion basket to original condition
Unmodified channel	Sediment accumulation	3.0-foot sediment depth	Remove sediment from channel bottom
	Woody vegetation	Woody vegetation occupies entire channel bottom	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel
Culverts	Concrete surface abrasion	Abrasion of 2 inches	Resurface
	Sediment accumulation	1.5-foot sediment depth	Remove sediment
All	Obstructions to flow	Present	Remove fallen trees and debris

TABLE 8.2
Adobe Creek--El Camino Real to End of Project
Maintenance Standards for Vegetation and Sediment Removal
(continued)

Facility Type	Maintenance Issue	Acceptable Maintenance Limit	Performance Criteria
Reach 10 to Entrance of Bypass Channel: Interstate 280 to Bypass Channel			
Gabion/rock-lined channel at Foothill College	Sediment accumulation	1.5-foot sediment depth	Remove sediment from channel bottom
	Rock lining repair	Erosion of rock lining to subgrade material	Replace rock lining to original condition
	Woody vegetation	Woody vegetation occupies entire channel bottom	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel and 4± feet up gabion banks
	Gabion repair	Break in gabion wire	Restore gabion to original condition
	Non-native vegetation on revegetated benches (both sides)	Present	Remove by hand labor and approved herbicides
Unmodified channel	Sediment accumulation	3.0-foot sediment depth	Remove sediment from channel bottom
	Woody vegetation	Woody vegetation occupies entire channel	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel
Concrete structures	Concrete surface abrasion	Abrasion of 2 inches	Resurface
	Sediment accumulation	1.5-foot sediment depth	Remove sediment
All	Vegetation on roads or ramps	Present	Remove by mechanical means and aquatic herbicides to edge of road or ramp
	Vegetation overhanging roads or ramps	Present	Cut back overhanging vegetation to edge of road or ramp up to a height of 12 feet
	Obstructions to flow	Present	Remove fallen trees

TABLE 8.2
Adobe Creek—El Camino Real to End of Project
Maintenance Standards for Vegetation and Sediment Removal
(continued)

Facility Type	Maintenance Issue	Acceptable Maintenance Limit	Performance Criteria
Entrance of Bypass Channel to the End of Project			
Rock-lined channel at Adobe Creek Estates	Sediment accumulation	2-foot sediment depth above design elevation	Remove sediment from channel bottom
	Rock lining repair	Erosion or rock lining to subgrade material	Replace rock lining to original design condition
	Woody vegetation	Woody vegetation occupies entire channel bottom	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel
Unmodified channel	Sediment accumulation	3.0-foot sediment depth	Remove sediment from channel bottom
	Woody vegetation	Woody vegetation occupies entire channel bottom	Remove by hand labor and aquatic herbicides to grade and chemically treat stumps from toe to toe of channel
Culverts	Concrete surface abrasion	Abrasion of 2 inches	Resurface
	Sediment accumulation	1.5-foot sediment depth	Remove sediment
All	Vegetation on roads or ramps	Present	Remove by mechanical means and aquatic herbicides to edge of road or ramp
	Vegetation overhanging roads or ramps	Present	Cut back overhanging vegetation to edge of road or ramp up to a height of 12 feet
	Obstructions to flow	Present	Remove fallen trees and debris

CHAPTER 9
PROJECT COST, FINANCING, AND STAGING

The estimated total first cost of the proposed flood control project is $8.6 million and includes all cost for engineering, construction, inspection, administration, and mitigation (see Table 1.2 for details).

The proposed measures will be funded through two sources of existing revenue: (1) the Northwest Zone's allocation of the 1 percent property tax and (2) Northwest Zone benefit assessments. (The assessment per single-family residence is $61.52 per year in FY 1998-99). Debt financing may be used to supplement these two revenue sources and permit an accelerated completion schedule for the project. The project is estimated to be constructed over a 4 to 5-year period.

The estimated construction schedule is provided in Table 9.1. As shown in the table, project construction could begin in FY 1999 with the last reach underway by FY 2005. The schedule may vary depending on available funding and staging of construction elements. The channel modification in Reach 5 would only occur after dedication of sufficient right of way.

TABLE 9.1
Adobe Creek Capital Improvement Project—Construction Staging

Reach	Limits	Proposed Measures	Estimated 1995 Total First Cost[1] (Thousands)	Scheduled Commencement of Construction (Fiscal Year)
1	El Camino Real to Hetch Hetchy Pipeline	El Camino Real culvert replacement, four erosion repair sites, and one vortex rock weir	$1,902	2001
2	Hetch Hetchy Pipeline to upstream Alta Mesa Cemetery	Four erosion repair sites	204	2001
3	Upstream Alta Mesa Cemetery to Yerba Buena Avenue	Four erosion repair sites and four vortex rock weirs	138	2001
4	Yerba Buena Avenue to Foothill Expressway	One erosion repair site and one vortex rock weir	48	2001
5	Foothill Expressway to West Edith Avenue	Additional culvert under Foothill Expressway	1,011	2001
		Channel modification downstream of West Edith Road, and one erosion site repair	1,631	1999[2]
6	West Edith Avenue to Burke Road	None	0	–
7	Burke Road to Manresa Way	Replace Burke Road bridge	535	2003
8	Manresa Way to O'Keefe Lane	Two erosion site repairs	17	2003
9	O'Keefe Lane to Interstate 280	Replace O'Keefe Lane culvert	563	2003
10	Interstate 280 to Foothill College Entrance	None	0	–
11	Foothill College Entrance to El Monte Road	Channel modification-entire reach	2,156	2005
12	El Monte Road to Tepa Way	One erosion site repair and two vortex rock weirs	119	2005
13	Tepa Way to Rhus Ridge Road	Bypass entrance modification	65	2005
14	Rhus Ridge Road to Francement Avenue	None	0	–
15	Francement Avenue to Murietta Lane	None	0	–
16	Murietta Lane to upstream Moody Road	None	0	–
		TOTAL PROJECT COST	$8,389	–

[1] Includes cost for engineering, construction, right of way, mitigation, and inspection. See Appendix F for detailed cost estimates.

[2] Right of way for project must be dedicated prior to commencement of construction.

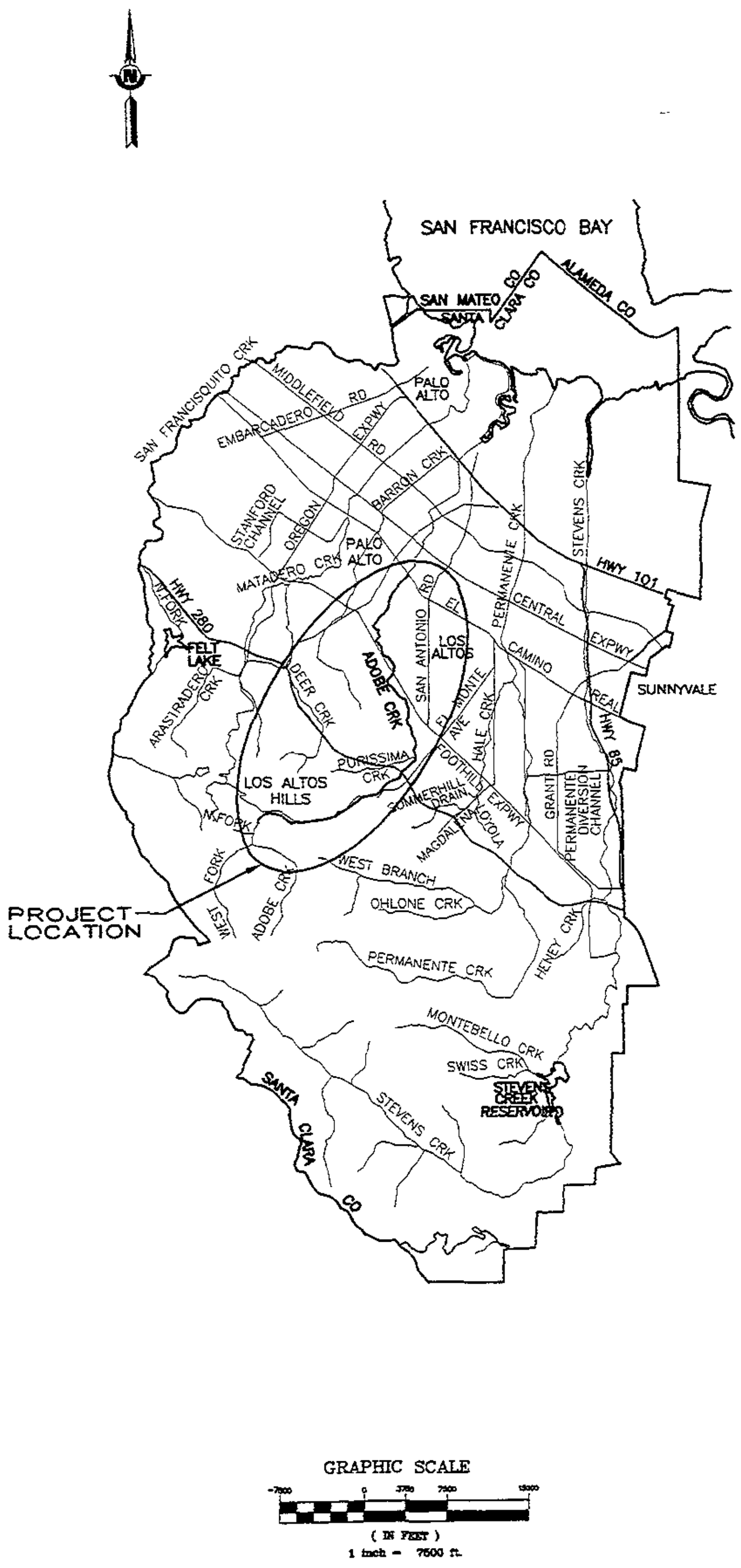
CHAPTER 10
CONCLUSIONS AND RECOMMENDATIONS

The existing flood carrying capacity of Adobe Creek between El Camino Real and upstream of Moody Road is less than the 1 percent design flow. Eight culverts within this reach have flooded in recent years. A 1 percent flood in this reach would affect over 220 structures resulting in estimated flood damages of $2.7 million.

The proposed capital improvement project would provide added protection from the 1 percent flood and would accomplish most of the objectives of the District and community. The following are the beneficial impacts of the project.

- Flooding: provides flood damage reduction from a 1 percent flood.
- Maintenance: the new maintenance program, combined with the proposed continuous maintenance corridor, will allow the District to efficiently maintain the creek as a system.
- Erosion: repairs areas of active erosion, protects banks from future erosion potential.
- Sedimentation: requires less frequent sediment removal in the channel.
- Local drainage: decreases the duration and frequency of flooding in the streets and local ponding.
- Water quality: decreases sediment and turbidity in water contributed from erosion of creek banks; identifies illicit connections to storm drain outfalls in support of nonpoint source program.
- Riparian vegetation: mitigates project impacts onsite and on adjacent lands.
- Wildlife habitat: mitigates impacts onsite and on adjacent lands.
- Fish habitat: mitigates impacts onsite and on adjacent lands and establishes low-flow fish channels and fish passable drop structures at all channel modification and culvert replacement sites.
- Recreation: conforms to recreation elements of the Adobe Creek Restoration Plan in providing a trail at the Foothill College channel modification site.

Therefore, it is recommended that the proposed project be approved and construction plans be prepared for implementation of the project.



MAP AND GENERAL PLAN

FOR

ADOBE CREEK

FROM

EL CAMINO REAL TO UPSTREAM OF MOODY ROAD

Santa Clara Valley Water District

NORTHWEST FLOOD CONTROL ZONE

PROJECT NO. 1010

INDEX

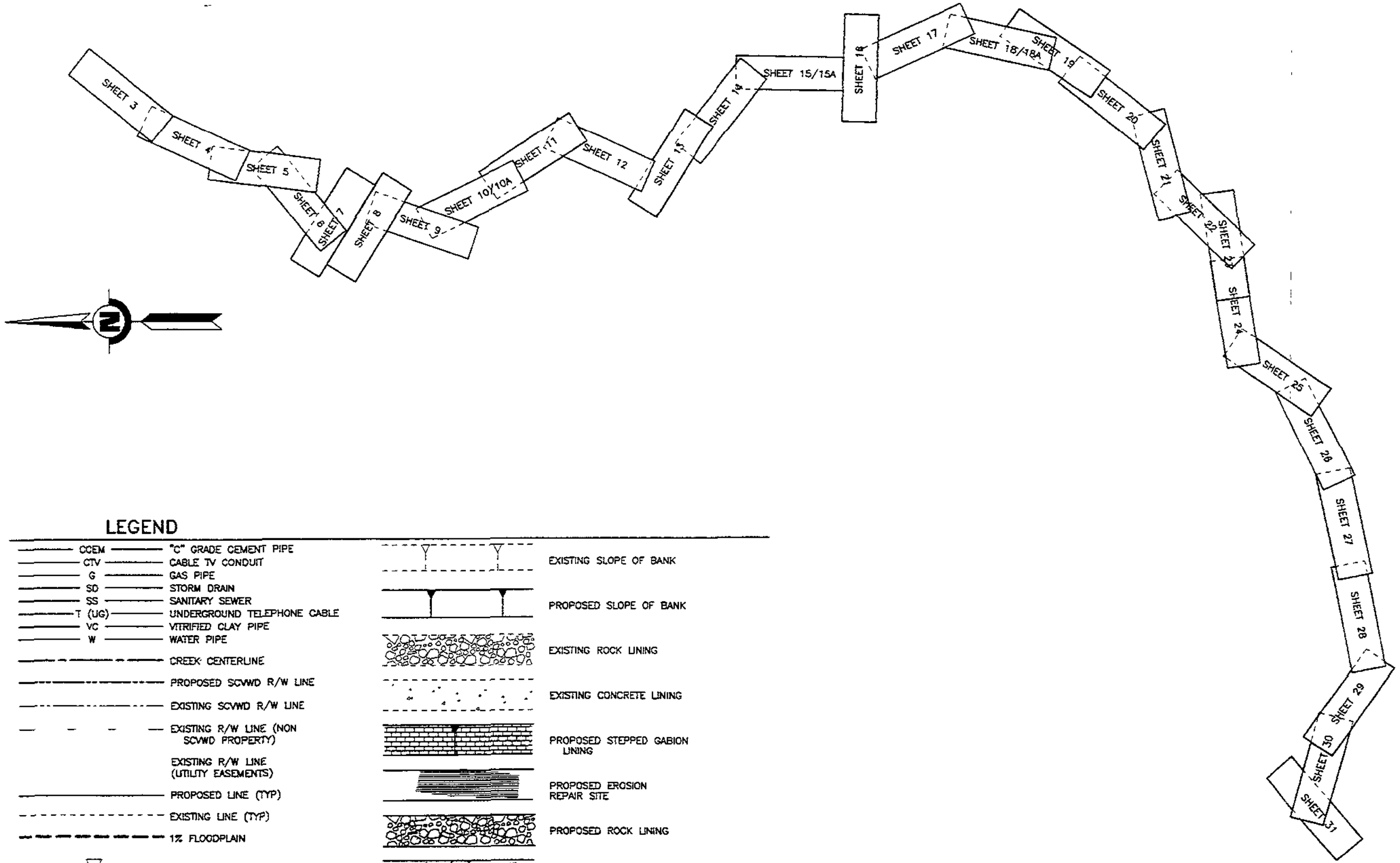
SHEET NO.	DESCRIPTION
1	LOCATION MAP & TITLE SHEET
2	INDEX MAP, ABBREVIATIONS, & LEGEND
3–31	PLAN AND PROFILE SHEETS
32–44	TYPICAL SECTIONS
45	DETAILS
S1–S3	WEST EDITH AVE. BOX CULVERT BYPASS ALTERNATIVE

REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

PROJECT APPROVAL:

WATER RESOURCE MANAGEMENT
GROUP MANAGER

DATE:



ABBREVIATIONS

%	PERCENT
1%	100-YEAR FLOOD
10%	10-YEAR FLOOD
43%	2.3-YEAR FLOOD
ABS	ACRYLOMITRILE BUTABINE STYRENE PIPE
AC	ASBESTOS CEMENT PIPE
ACB	ARTICULATED CONCRETE BLOCK
CB	CATCH BASIN
CFS	CUBIC FEET PER SECOND
CI	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
D/S	DOWNSTREAM
DBL	DOUBLE
DI	DROP INLET
EL	ELEVATION
ESMT	EASEMENT
EXIST	EXISTING
HORIZ	HORIZONTAL
JP	JOINT UTILITY POLE
JT	JOINT UTILITY TRENCH
MAX	MAXIMUM
MIN	MINIMUM
NTS	NOT TO SCALE
PVC	POLYVINYL CHLORIDE PIPE
R/W	RIGHT OF WAY
RCB	REINFORCED CONCRETE BOX CULVERT
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
S	SLOPE
SCVWD	SANTA CLARA VALLEY WATER DISTRICT
SD	STORM DRAIN
SAN	SANITARY
SECT	SECTION
SHT	SHEET
STA	STATION
U/S	UPSTREAM
V	VERTICAL
VCP	VITRIFIED CLAY PIPE

LEGEND

CCEM	"C" GRADE CEMENT PIPE
CTV	CABLE TV CONDUIT
G	GAS PIPE
SD	STORM DRAIN
SS	SANITARY SEWER
T (UG)	UNDERGROUND TELEPHONE CABLE
VC	VITRIFIED CLAY PIPE
W	WATER PIPE
	CREEK CENTERLINE
	PROPOSED SCVWD R/W LINE
	EXISTING SCVWD R/W LINE
	EXISTING R/W LINE (NON SCVWD PROPERTY)
	EXISTING R/W LINE (UTILITY EASEMENTS)
	PROPOSED LINE (TYP)
	EXISTING LINE (TYP)
	1% FLOODPLAIN
	WATER SURFACE PROFILE (1% FLOW)
	WATER SURFACE PROFILE (10% FLOW)
	WATER SURFACE PROFILE (43% FLOW)
1 / 20-A, A / 20-A	1 INDICATES DETAIL A INDICATES SECTION 20-A INDICATES SHEET NUMBER ON WICH SECTION OR DETAIL APPEARS

	EXISTING SLOPE OF BANK
	PROPOSED SLOPE OF BANK
	EXISTING ROCK LINING
	EXISTING CONCRETE LINING
	PROPOSED STEPPED GABION LINING
	PROPOSED EROSION REPAIR SITE
	PROPOSED ROCK LINING
	PROPOSED CONCRETE LINING
	PROPOSED EARTH LINING

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. All cross sections or typical sections shown are looking upstream.
2. All maintenance roads and ramps to be paved with minimum 6" crushed rock.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R TALLEY
No. 25093
EXP. 12/31/01

DATE	2/22/99
DESIGN	PS
DRAWN	SL/CM
CHECKED	SW

Santa Clara Valley Water District

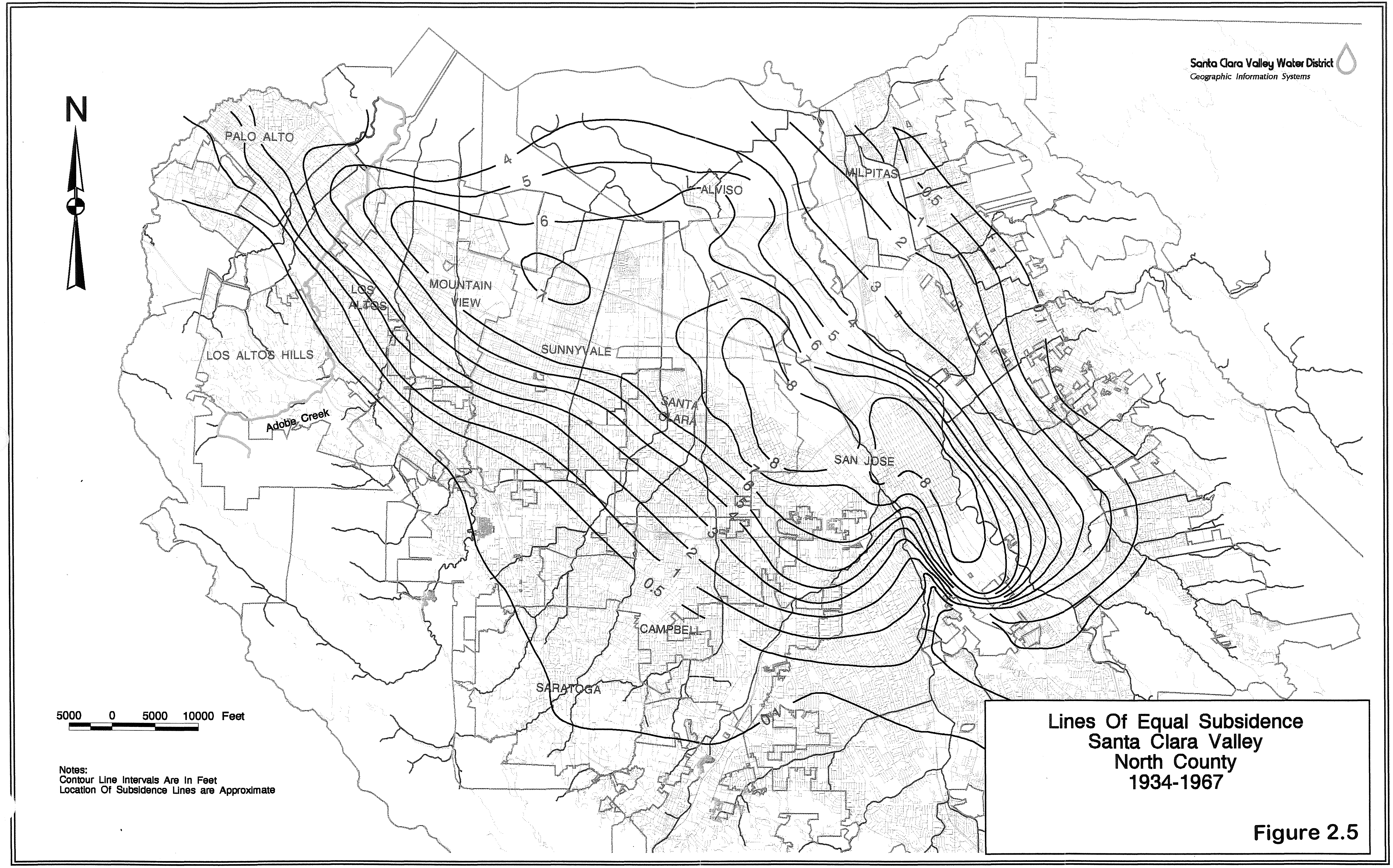
ENGINEERING CERTIFICATION	ENGINEERING APPROVAL
PROJECT ENGINEER R.C.E. NO 43184	SUPERVISING ENGINEER R.C.E. NO 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
INDEX MAP, ABBREVIATIONS, & LEGEND

SCALE
AS SHOWN

SHEET
2
2 OF 48

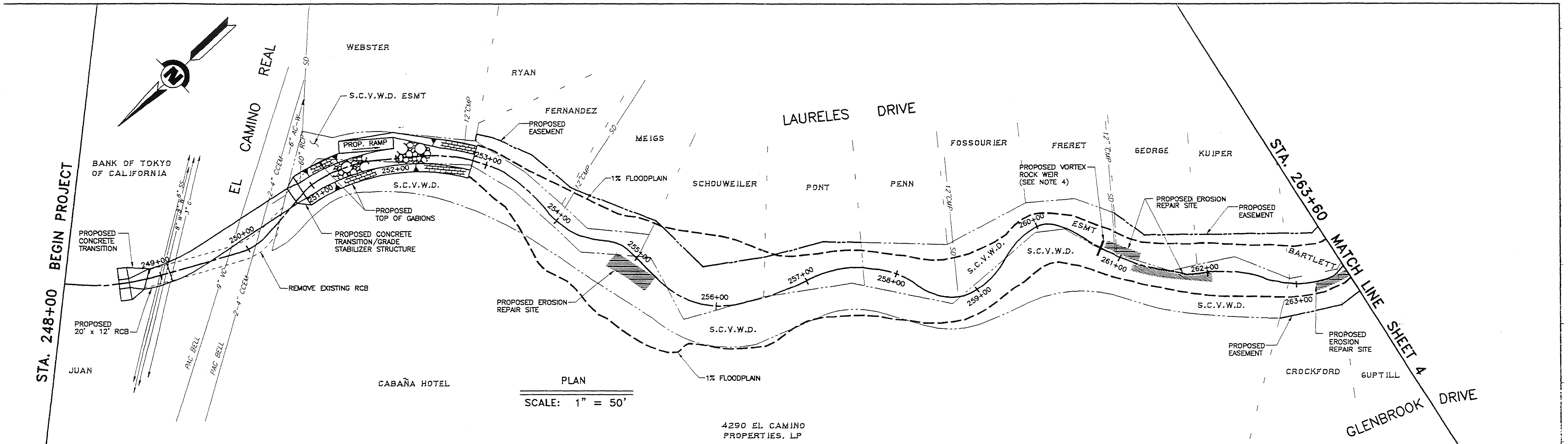
\GS\P\1010_101\D-SIZE\ACPL_002



Notes:
Contour Line Intervals Are In Feet
Location Of Subsidence Lines are Approximate

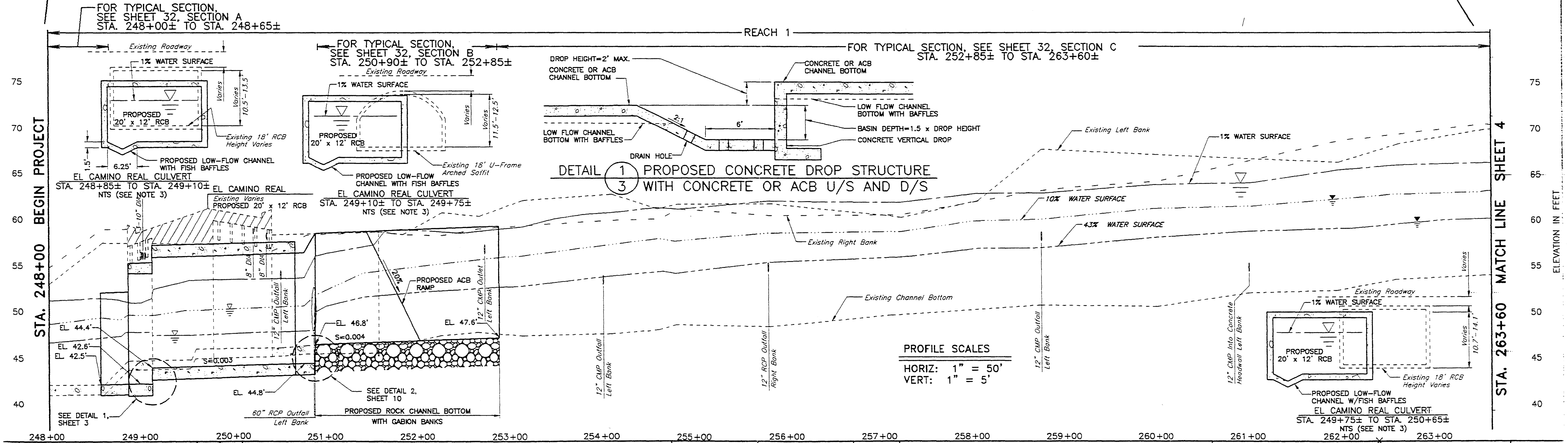
Lines Of Equal Subsidence
Santa Clara Valley
North County
1934-1967

Figure 2.5



PLAN

SCALE: 1" = 50'



FOR TYPICAL SECTION, SEE SHEET 32, SECTION A STA. 248+00± TO STA. 248+65±
REACH 1
FOR TYPICAL SECTION, SEE SHEET 32, SECTION B STA. 250+90± TO STA. 252+85±
FOR TYPICAL SECTION, SEE SHEET 32, SECTION C STA. 252+85± TO STA. 263+60±
Existing Roadway
1% WATER SURFACE
PROPOSED 20' x 12' RCB
Existing 18' RCB Height Varies
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES
EL CAMINO REAL CULVERT STA. 248+85± TO STA. 249+10± NTS (SEE NOTE 3)
Existing 18' U-Frame Arched Soffit
EL CAMINO REAL CULVERT STA. 249+10± TO STA. 249+75± NTS (SEE NOTE 3)
DROP HEIGHT=2' MAX.
CONCRETE OR ACB CHANNEL BOTTOM
LOW FLOW CHANNEL BOTTOM WITH BAFFLES
BASIN DEPTH=1.5 x DROP HEIGHT
CONCRETE VERTICAL DROP
DRAIN HOLE
DETAIL 1/3 PROPOSED CONCRETE DROP STRUCTURE WITH CONCRETE OR ACB U/S AND D/S
Existing Left Bank
1% WATER SURFACE
10% WATER SURFACE
43% WATER SURFACE
Existing Right Bank
Existing Channel Bottom
PROPOSED ACB RAMP
EL. 46.8'
S=0.004
EL. 47.6'
EL. 44.4'
EL. 42.6'
EL. 42.5'
S=0.003
EL. 44.8'
SEE DETAIL 1, SHEET 3
SEE DETAIL 2, SHEET 10
60" RCP Outfall Left Bank
PROPOSED ROCK CHANNEL BOTTOM WITH GABION BANKS
12" CMP Outfall Left Bank
12" RCP Outfall Right Bank
12" CMP Into Concrete Headwall Left Bank
PROFILE SCALES HORIZ: 1" = 50' VERT: 1" = 5'
PROPOSED LOW-FLOW CHANNEL W/FISH BAFFLES
EL CAMINO REAL CULVERT STA. 249+75± TO STA. 250+65± NTS (SEE NOTE 3)
STA. 248+00 BEGIN PROJECT
STA. 263+60 MATCH LINE SHEET 4
ELEVATION IN FEET
40
45
50
55
60
65
70
75
248+00
249+00
250+00
251+00
252+00
253+00
254+00
255+00
256+00
257+00
258+00
259+00
260+00
261+00
262+00
263+00

REV	DESCRIPTION	DATE	APPR

REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

REFERENCE INFORMATION AND NOTES
1. 1% flowrate 2900 cfs, 10% flowrate 1600 cfs, 43% flowrate 710 cfs.
2. Starting water surface from 1985 S.C.V.W.D. Engineer's Report.
3. Reference orientation looking upstream.
4. See vortex rock weir details on sheet 45.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/98
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

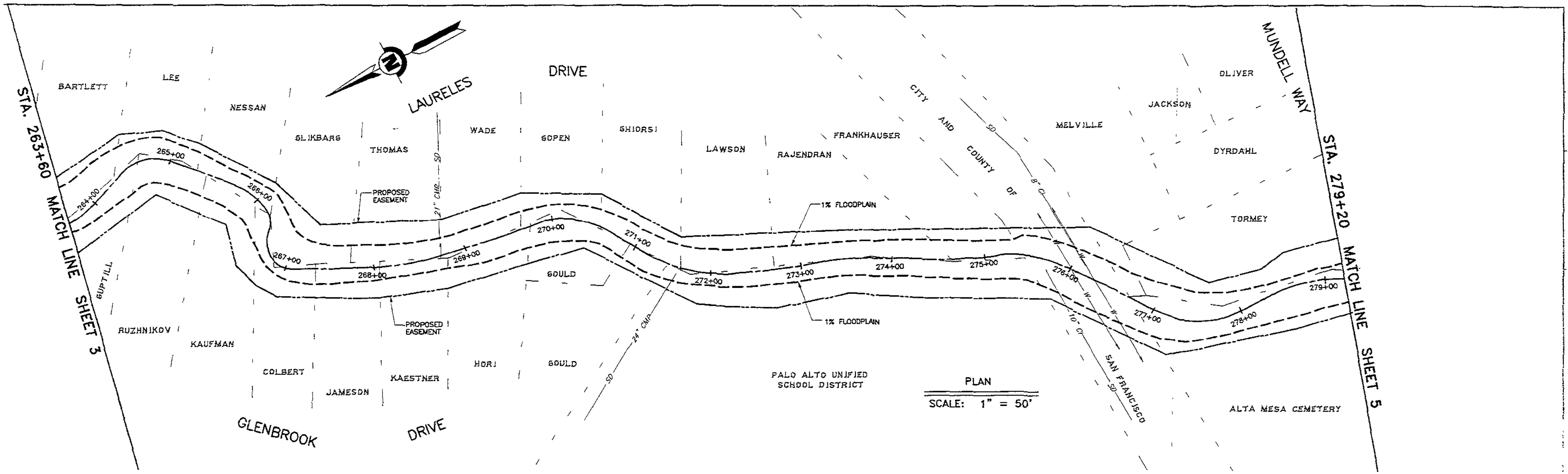
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

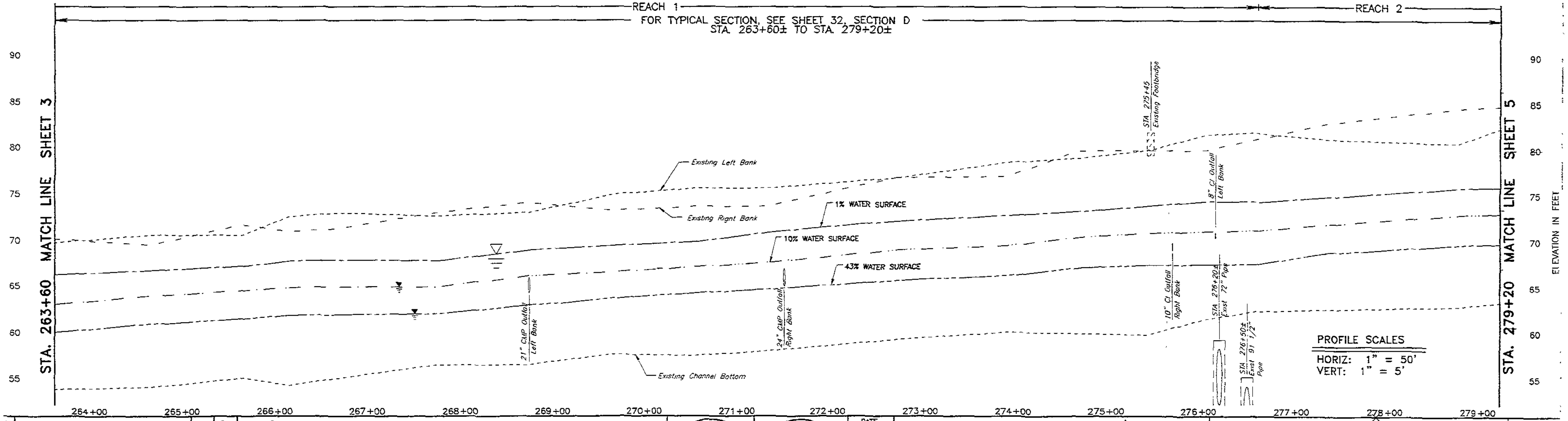
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET
3
3 OF 48

DWGS\P\1010_101\D-SIZE\ACPP_003.dwg





DESCRIPTION	DATE	APPR

REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2900 cfs, 10% flowrate 1600 cfs, 43% flowrate 710 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO 43184

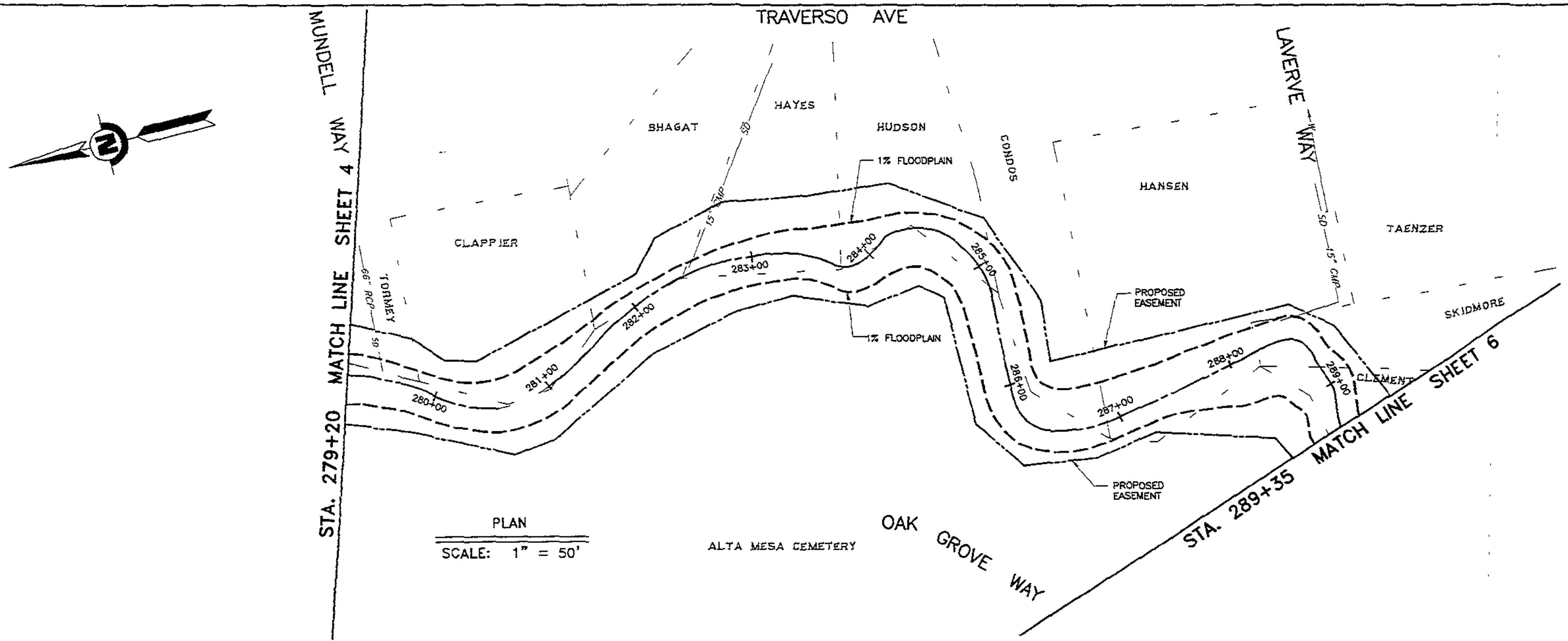
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO 25093

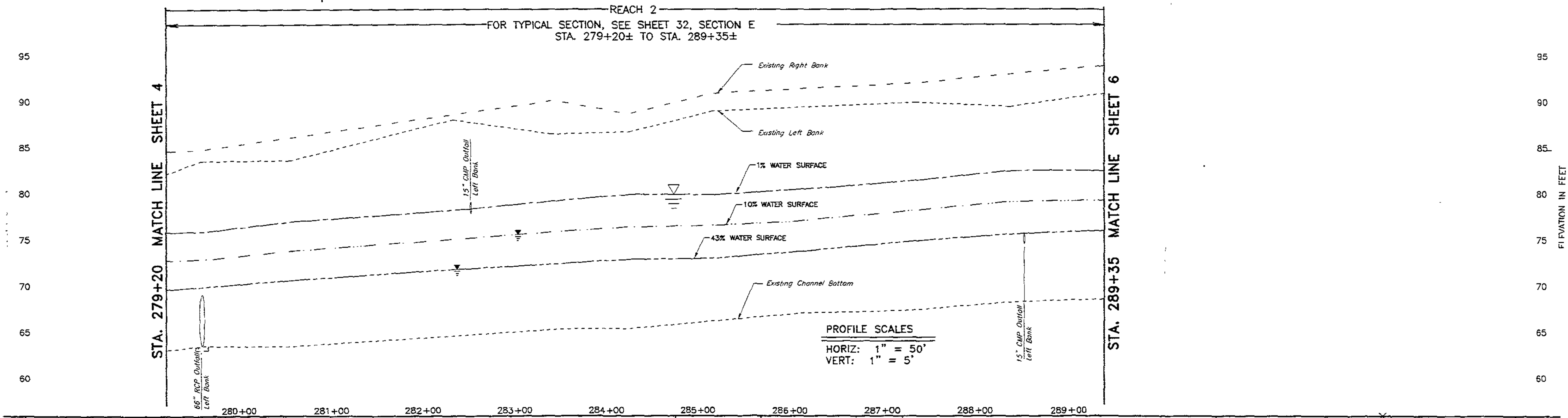
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN

SHEET
4
4 OF 48

VGS\P\1010_101\D-SIZE\ACPP_004dwg





REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. 1% flowrate 2900 cfs. 10% flowrate 1600 cfs. 43% flowrate 710 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00
CIVIL

RANDALL R TALLEY
No. 25093
EXP. 12/31/01
CIVIL

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

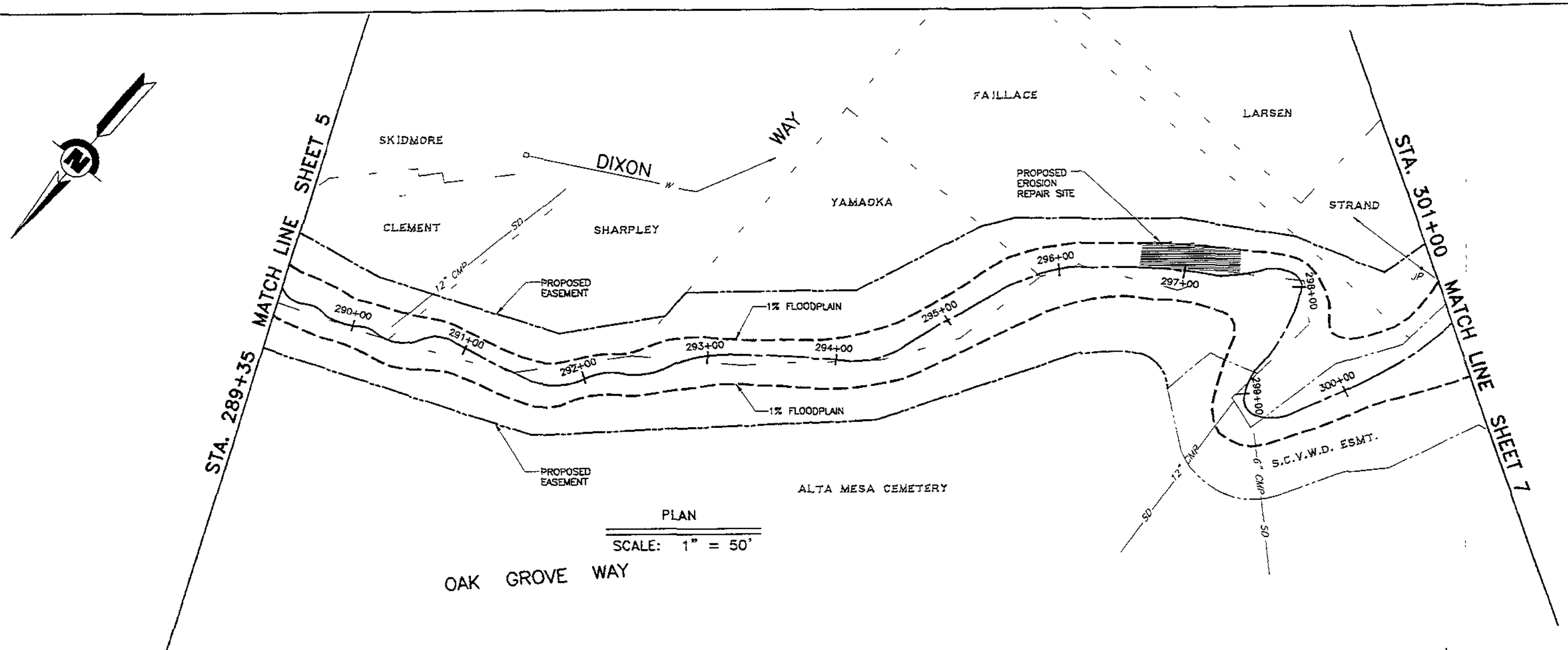
Santa Clara Valley Water District

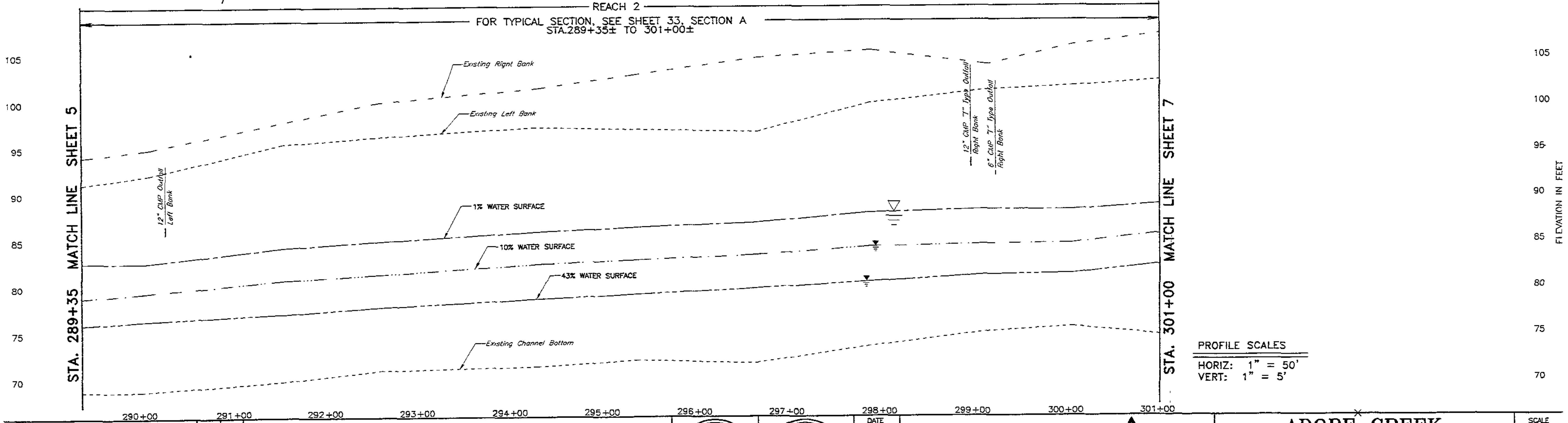
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET
5
5 OF 48





PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'

V	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2900 cfs, 10% flowrate 1600 cfs, 43% flowrate 710 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00
CIVIL

RANDALL R TALLEY
No. 25093
EXP. 12/31/01
CIVIL

DATE
2/22/98
DESIGN
PS/SS
DRAWN
SL/CM/JA
CHECKED
SW

Santa Clara Valley Water District

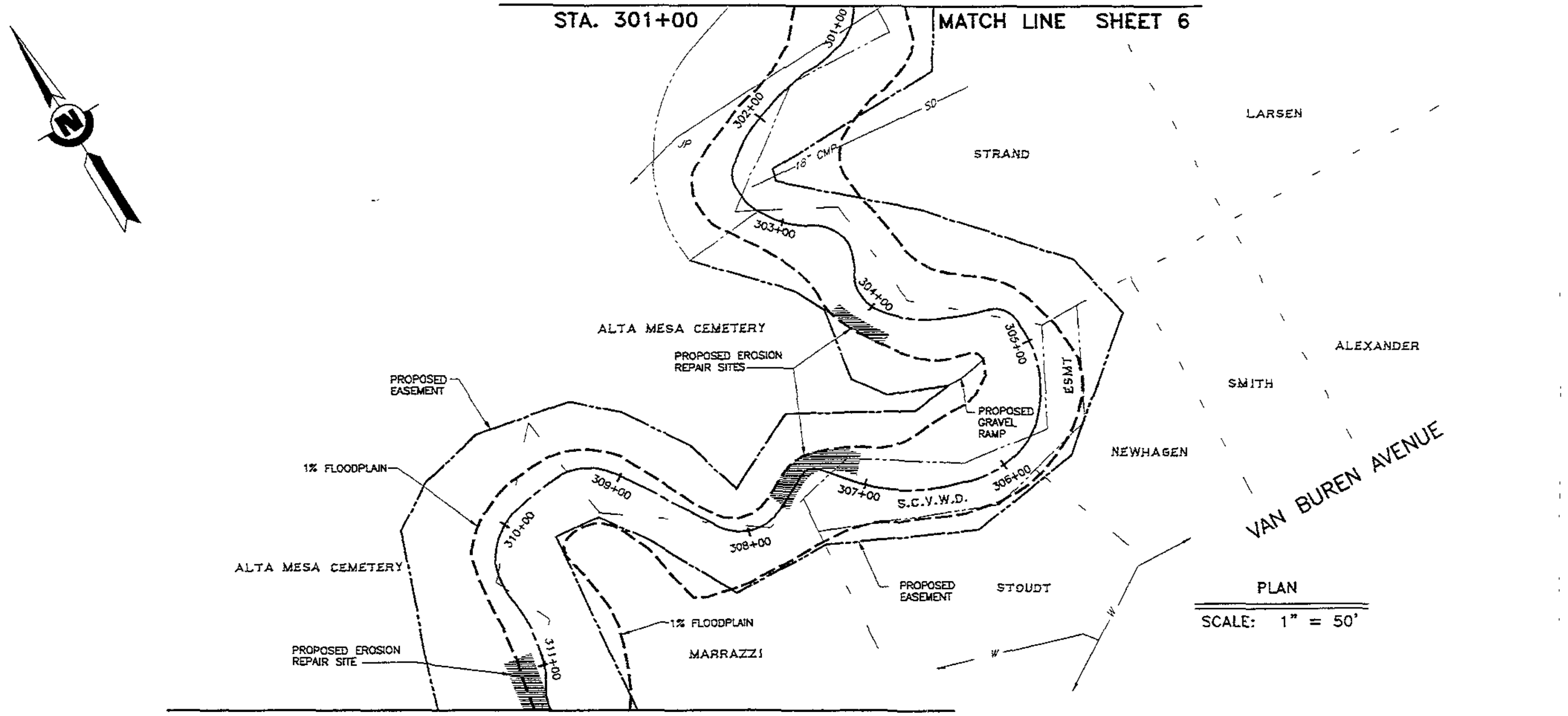
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

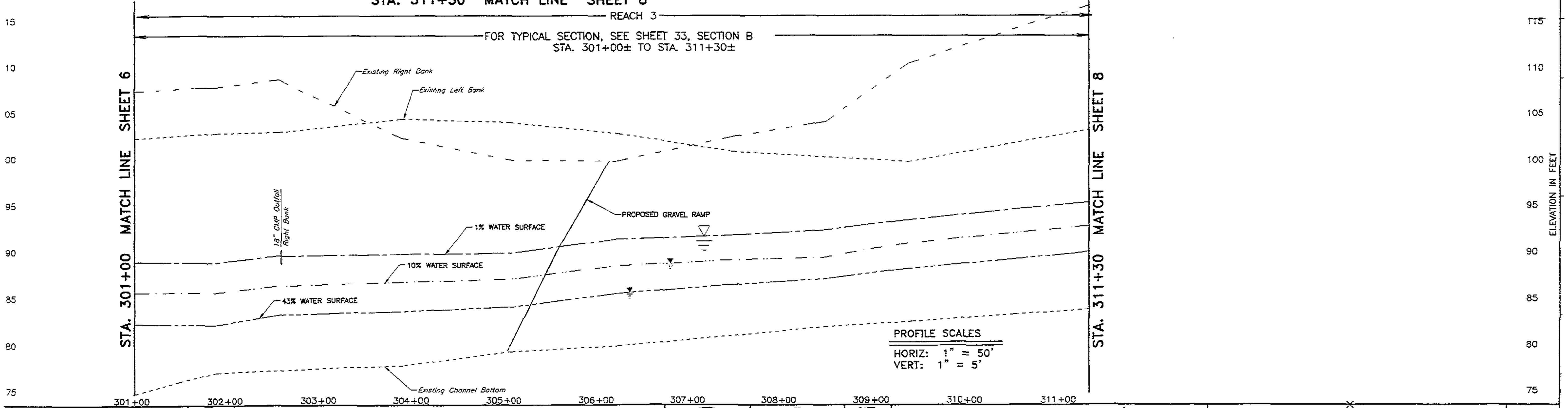
SCALE
AS SHOWN
SHEET
6
6 OF 48

DWGS\P\1010_101\D-SIZE\ACPP_006.dwg



PLAN

SCALE: 1" = 50'



PROFILE SCALES

HORIZ: 1" = 50'
VERT: 1" = 5'

DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN			1. 1% flowrate 2900 cfs. 10% flowrate 1600 cfs. 43% flowrate 710 cfs.

SCOTT M. WILSON No. 43184 EXP. 3/31/00

RANDALL R TALLEY No. 25093 EXP. 12/31/01

DATE 2/22/98
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

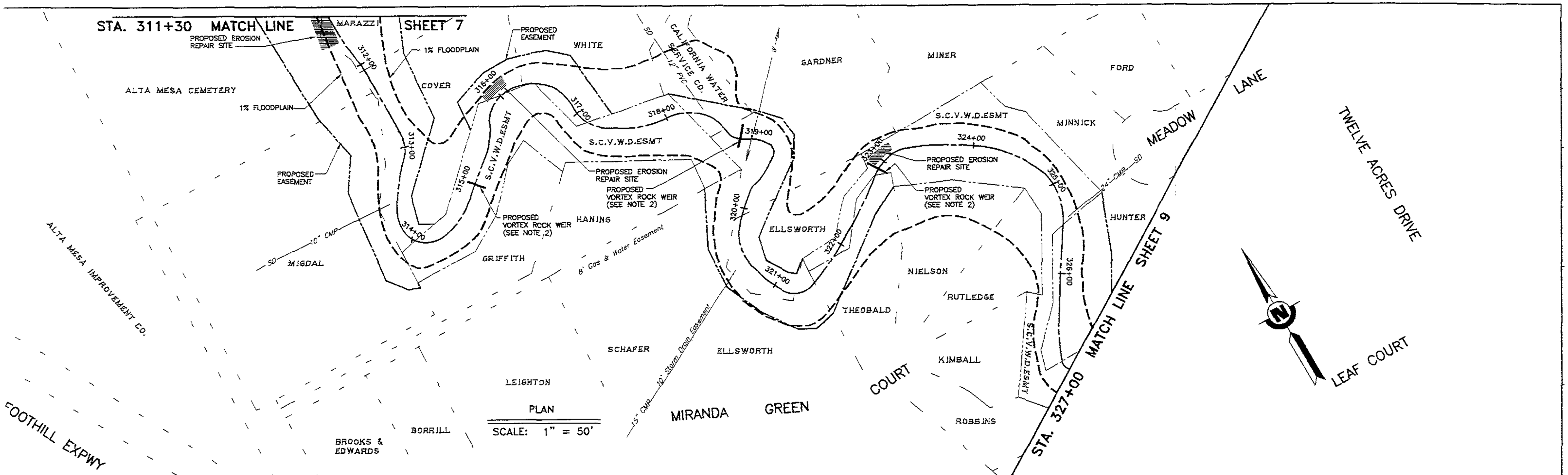
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

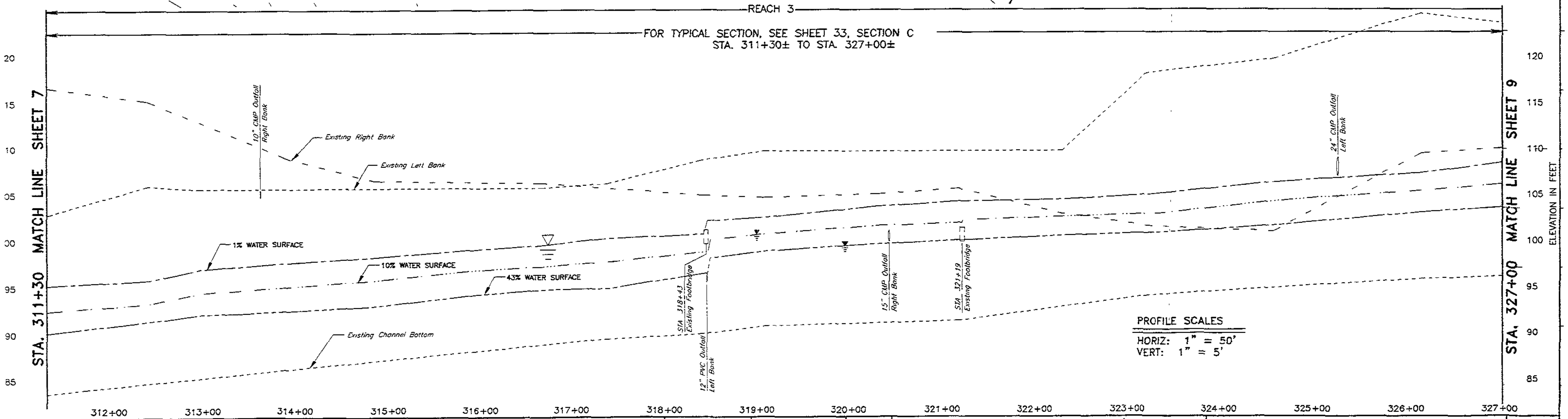
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET 7
7 OF 48

/GS\P\1010_101\D-SIZE\ACPP_007.dwg





DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES
1. 1% flowrate 2900 cfs. 10% flowrate 1600 cfs. 43% flowrate 710 cfs.
2. See vortex rock weir details on sheet 45.

SCOTT M. WILSON NO. 43184 EXP. 3/31/00 CIVIL

RANDALL R TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE 3/3/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

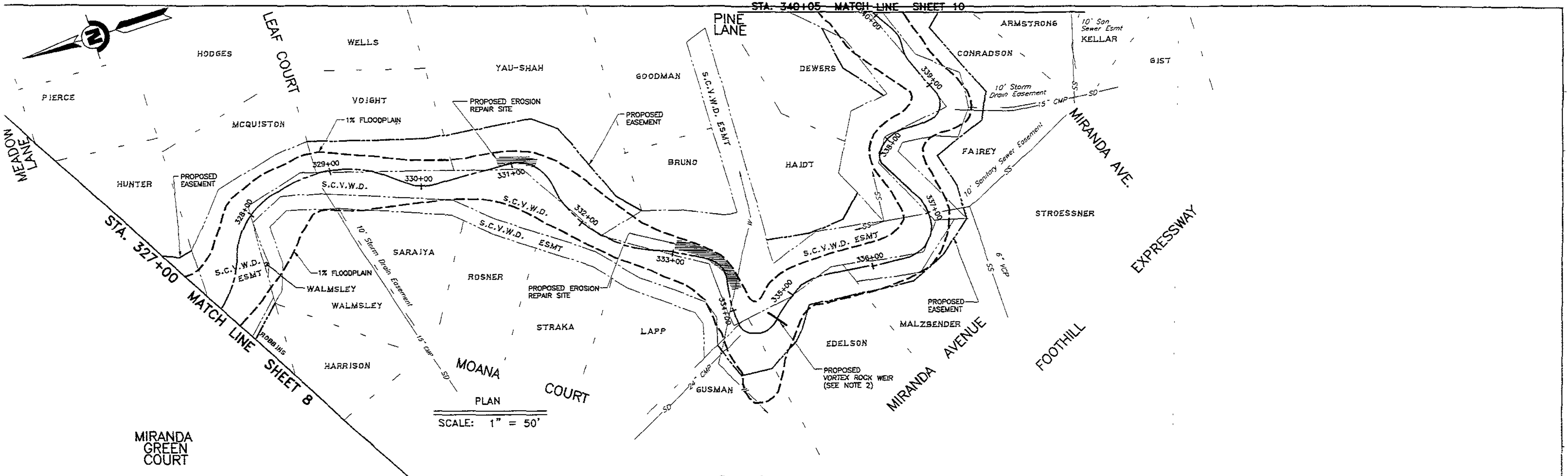
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E NO 43184

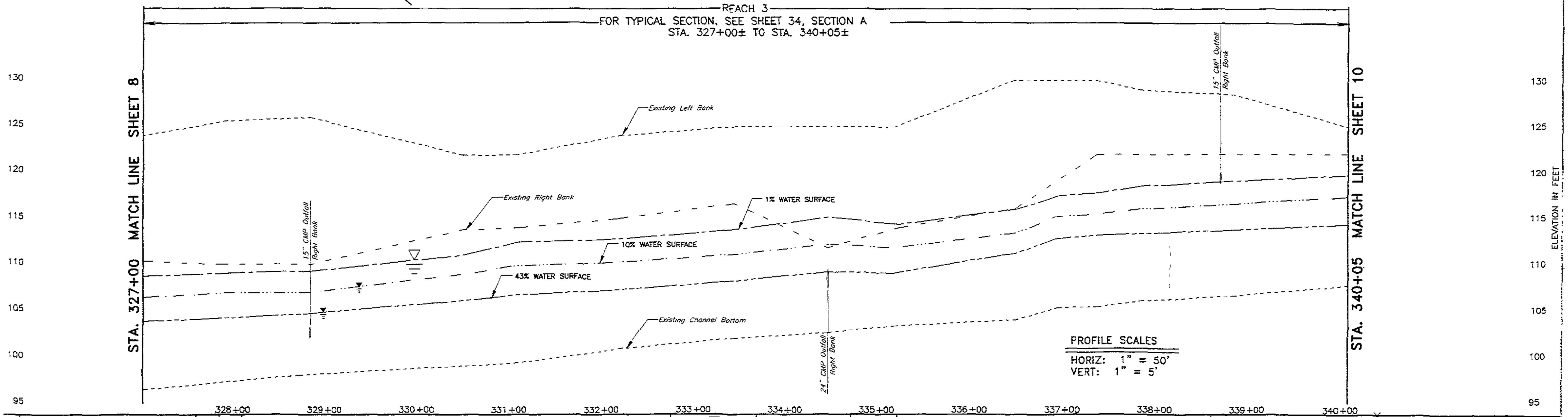
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E NO 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET 8
8 OF 48

/GS\P\1010_101\D_SIZE\ACPP_008.dwg





REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2900 cfs. 10% flowrate 1600 cfs. 43% flowrate 710 cfs.
2. See vortex rock weir details on sheet 45.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00
CIVIL

RANDALL R TALLEY
No. 25093
EXP. 12/31/01
CIVIL

DATE 2/22/98
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO 43184

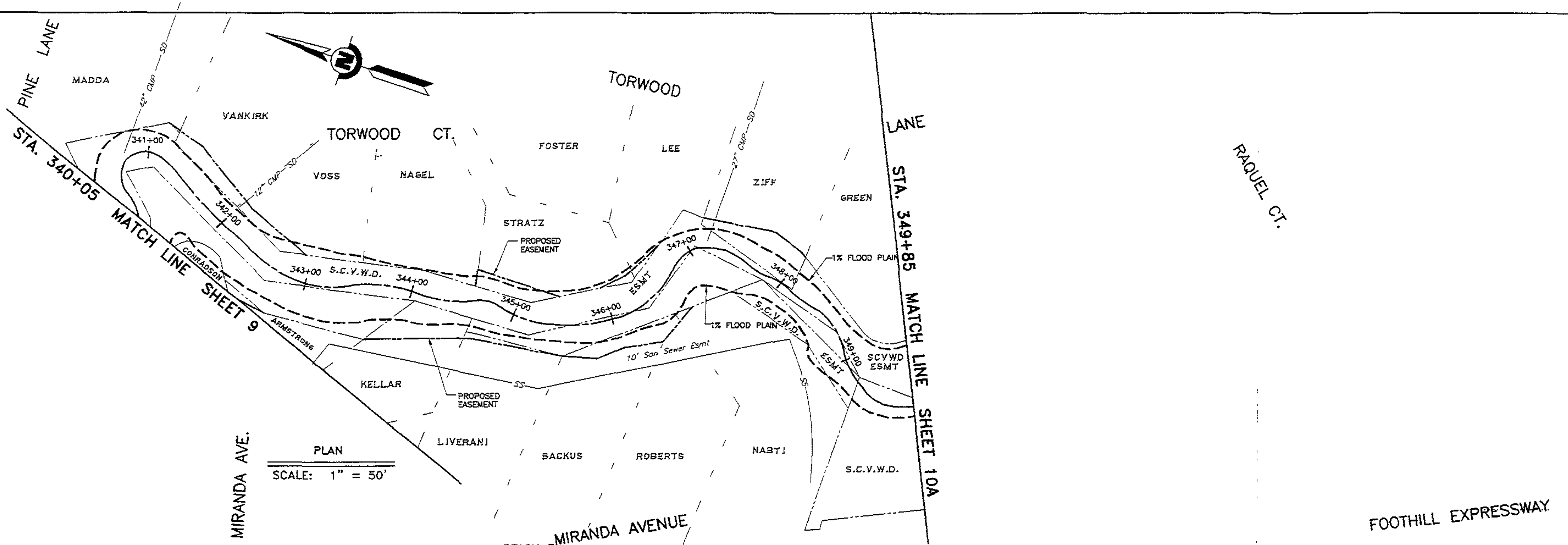
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO 25093

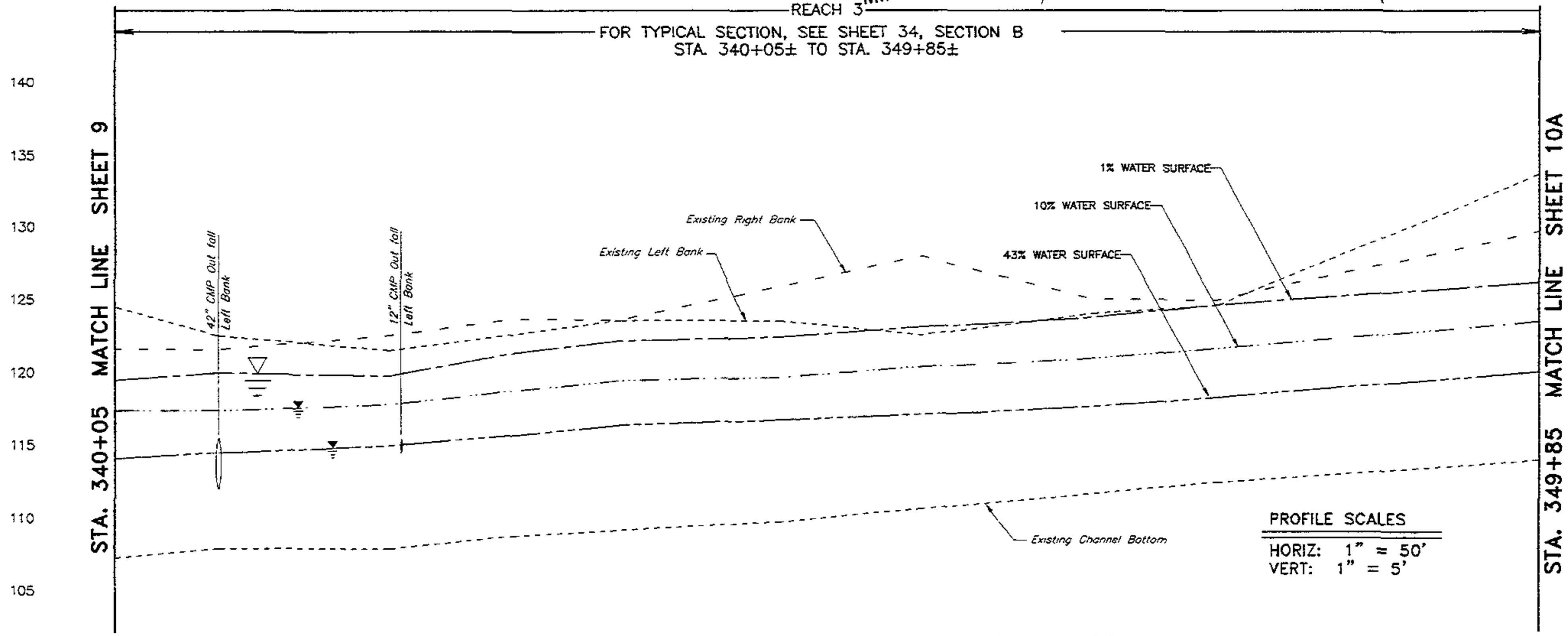
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

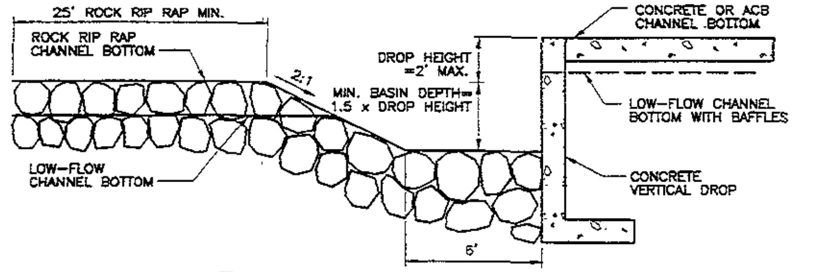
SCALE AS SHOWN

SHEET 9
9 OF 48

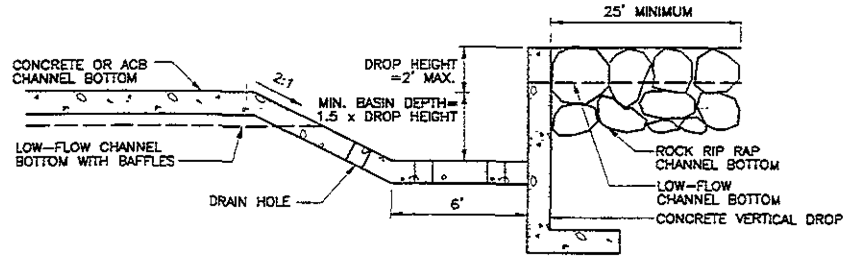
DWGS\P\1010 101\D-SIZE\ACPP 009 dwg






25' ROCK RIP RAP MIN.
ROCK RIP RAP CHANNEL BOTTOM
2:1
DROP HEIGHT =2' MAX.
MIN. BASIN DEPTH= 1.5 x DROP HEIGHT
CONCRETE OR ACB CHANNEL BOTTOM
LOW-FLOW CHANNEL BOTTOM WITH BAFFLES
CONCRETE VERTICAL DROP
LOW-FLOW CHANNEL BOTTOM
6'

DETAIL ① CONCRETE DROP STRUCTURE
(10) WITH CONCRETE OR ACB U/S
NTS


25' MINIMUM
CONCRETE OR ACB CHANNEL BOTTOM
2:1
DROP HEIGHT =2' MAX.
MIN. BASIN DEPTH= 1.5 x DROP HEIGHT
LOW-FLOW CHANNEL BOTTOM WITH BAFFLES
DRAIN HOLE
6'
ROCK RIP RAP CHANNEL BOTTOM
LOW-FLOW CHANNEL BOTTOM
CONCRETE VERTICAL DROP

DETAIL ② CONCRETE DROP STRUCTURE
(10) WITH CONCRETE OR ACB D/S
NTS

ELEVATION IN FEET

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. 1% flow rate 2900 cfs. 10% flow rate 1600 cfs. 43% flowrate 710 cfs.
2. Reference orientation looking upstream.

SCOTT M. WILSON NO. 43184 EXP. 3/31/00 CIVIL

RANDALL R. TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE	2/22/98
DESIGN	PS/SS
DRAWN	SL/CM/JA
CHECKED	SW

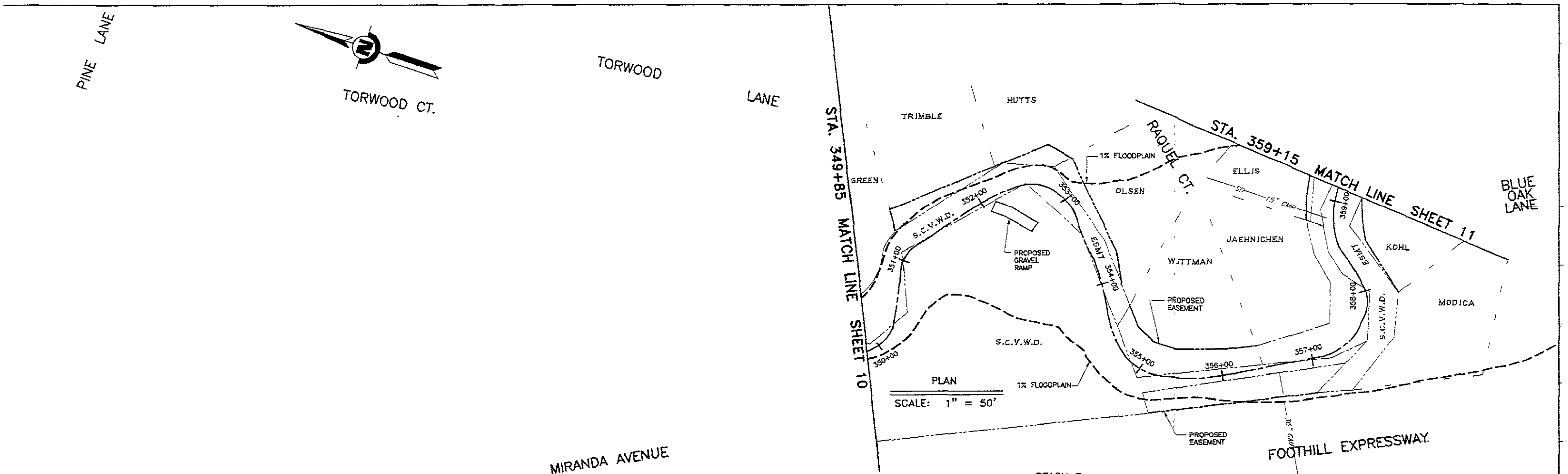
Santa Clara Valley Water District

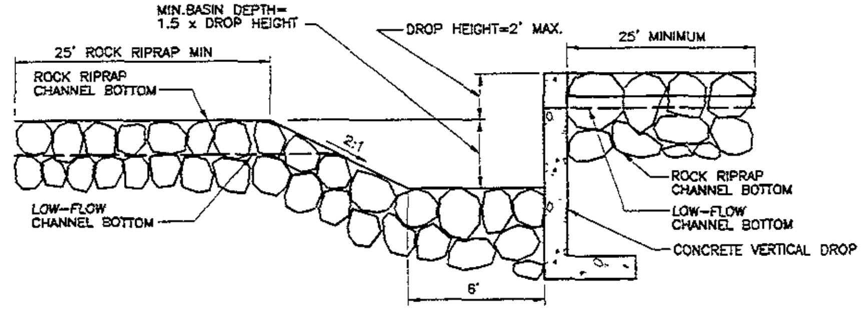
ENGINEERING CERTIFICATION	ENGINEERING APPROVAL
PROJECT ENGINEER R.C.E. NO 43184	SUPERVISING ENGINEER R.C.E. NO 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

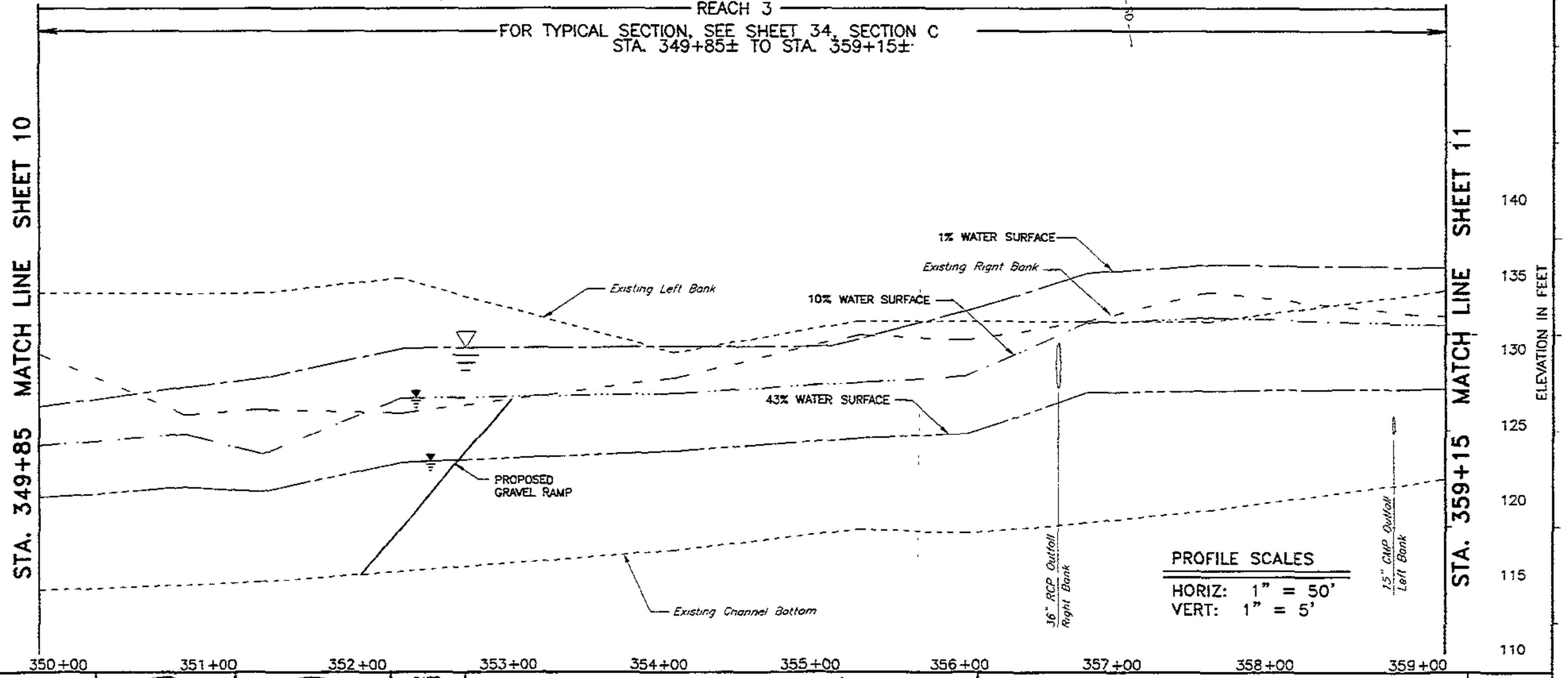
SCALE AS SHOWN
SHEET 10
10 OF 48

WGS\P\1010_101\D-SIZE\ACPP_010.dwg





DETAIL (1 / 10A) CONCRETE DROP STRUCTURE WITH ROCK RIPRAP U/S AND D/S
NTS



DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2900 cfs, 10% flowrate 1600 cfs, 43% flowrate 710 cfs.

SCOTT M. WILSON No. 43184 EXP. 3/31/00

RANDALL R. TALLEY No. 25093 EXP. 12/31/01

DATE	2/22/98
DESIGN	PS/SS
DRAWN	SL/CM/JA
CHECKED	CM

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

PROJECT ENGINEER R.C.E. NO 43184

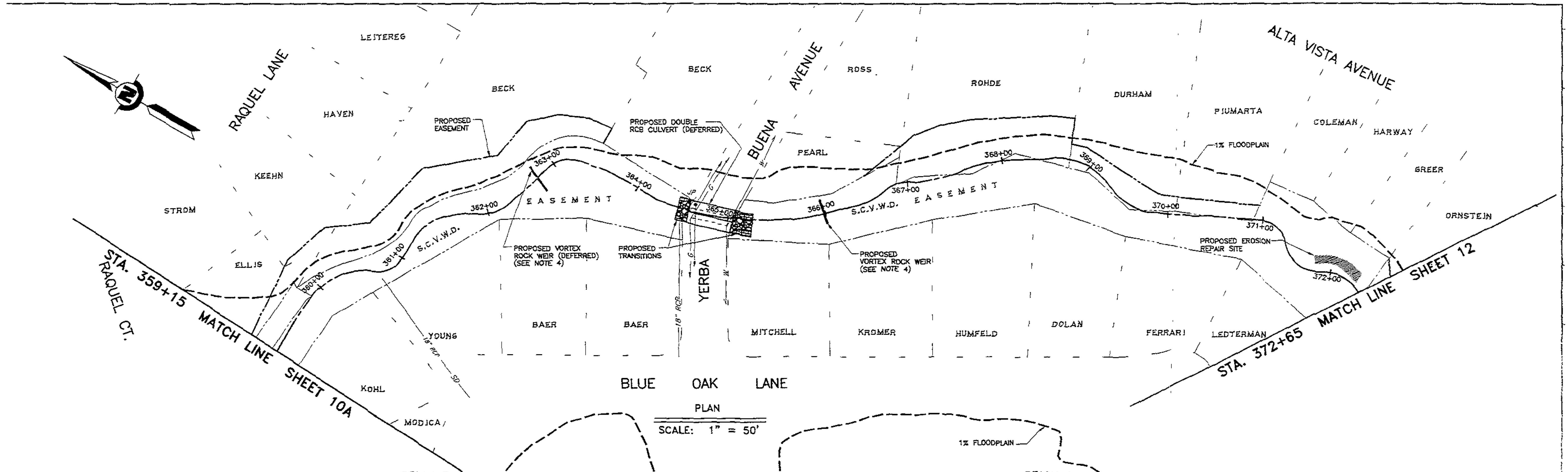
ENGINEERING APPROVAL

SUPERVISING ENGINEER R.C.E. NO 25093

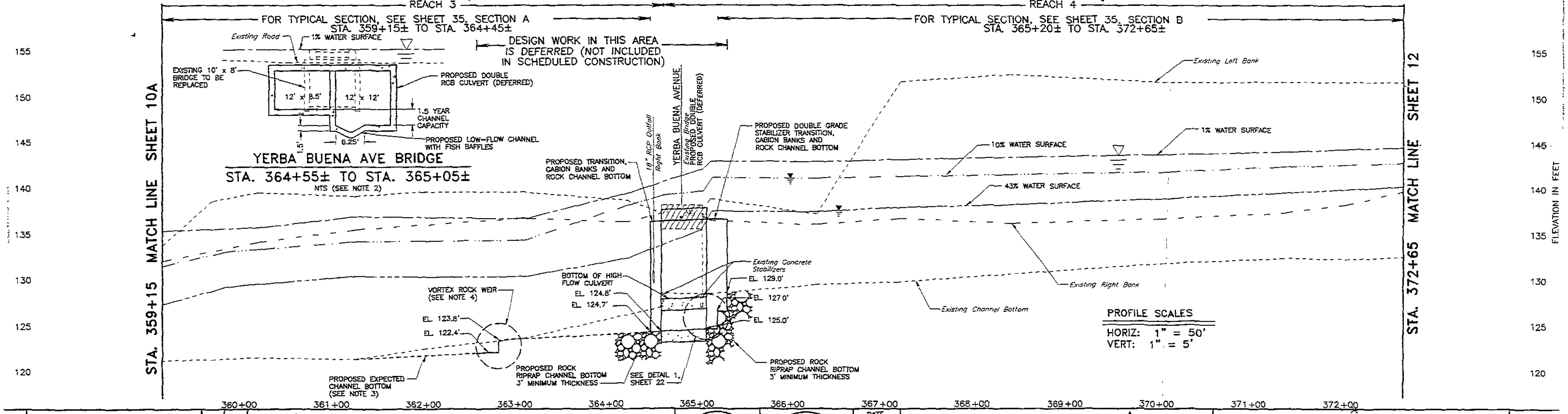
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN

SHEET 10A
11 OF 48



PLAN
SCALE: 1" = 50'


REACH 3
REACH 4
FOR TYPICAL SECTION, SEE SHEET 35, SECTION A
STA. 359+15± TO STA. 364+45±
DESIGN WORK IN THIS AREA IS DEFERRED (NOT INCLUDED IN SCHEDULED CONSTRUCTION)
FOR TYPICAL SECTION, SEE SHEET 35, SECTION B
STA. 365+20± TO STA. 372+65±
Existing Road
1% WATER SURFACE
EXISTING 10' x 8' BRIDGE TO BE REPLACED
12' x 8.5'
12' x 12'
PROPOSED DOUBLE RCB CULVERT (DEFERRED)
1.5 YEAR CHANNEL CAPACITY
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES
1.5'
6.25'
YERBA BUENA AVE BRIDGE
STA. 364+55± TO STA. 365+05±
NTS (SEE NOTE 2)
155
150
145
140
135
130
125
120
STA. 359+15 MATCH LINE SHEET 10A
STA. 372+65 MATCH LINE SHEET 12
ELEVATION IN FEET
PROPOSED TRANSITION, CABION BANKS AND ROCK CHANNEL BOTTOM
18" RCP Outfall
Right Bank
YERBA BUENA AVENUE
Existing Bridge
PROPOSED DOUBLE RCB CULVERT (DEFERRED)
PROPOSED DOUBLE GRADE STABILIZER TRANSITION, CABION BANKS AND ROCK CHANNEL BOTTOM
10% WATER SURFACE
1% WATER SURFACE
43% WATER SURFACE
Existing Left Bank
Existing Right Bank
Existing Channel Bottom
BOTTOM OF HIGH FLOW CULVERT
EL. 124.8'
EL. 124.7'
Existing Concrete Stabilizers
EL. 129.0'
EL. 127.0'
EL. 125.0'
VORTEX ROCK WEIR (SEE NOTE 4)
EL. 123.8'
EL. 122.4'
PROPOSED EXPECTED CHANNEL BOTTOM (SEE NOTE 3)
PROPOSED ROCK RIPRAP CHANNEL BOTTOM 3' MINIMUM THICKNESS
SEE DETAIL 1, SHEET 22
PROPOSED ROCK RIPRAP CHANNEL BOTTOM 3' MINIMUM THICKNESS
360+00
361+00
362+00
363+00
364+00
365+00
366+00
367+00
368+00
369+00
370+00
371+00
372+00

PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. 1% flowrate 2900 cfs. 10% flowrate 1600 cfs. 43% flowrate 710 cfs.
2. Reference orientation looking upstream.
3. Channel bottom will be allowed to degrade to expected elevation.
4. See vortex rock weir details on sheet 45.

SCOTT M. WILSON
NO. 43164
EXP. 3/31/00
CIVIL

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01
CIVIL

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

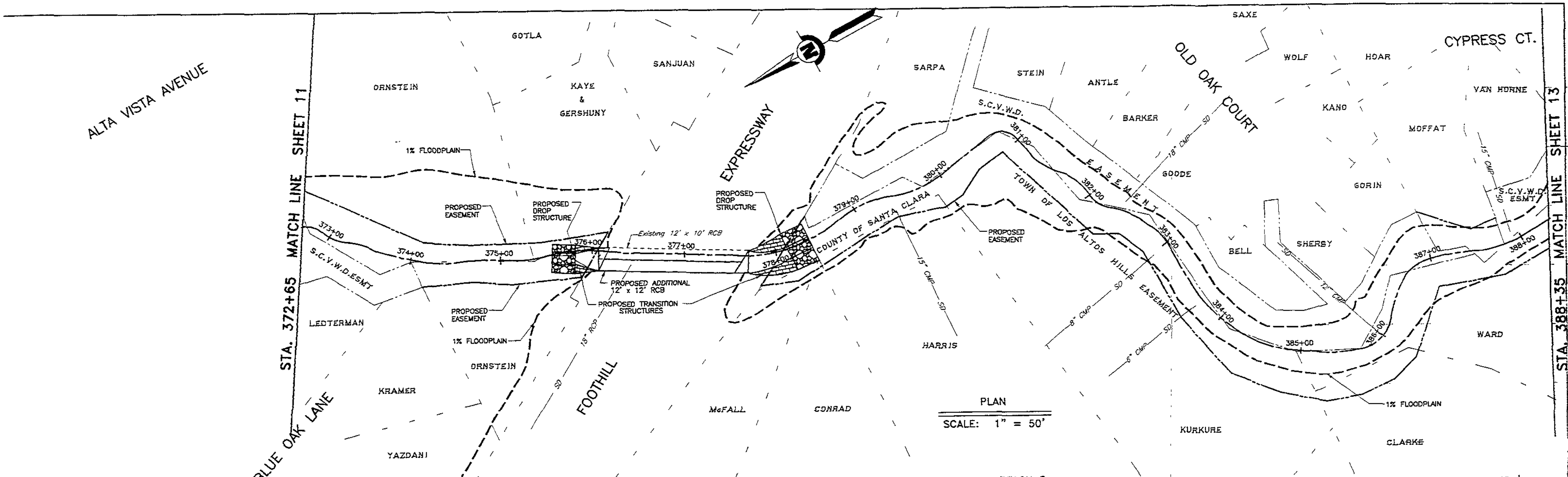
Santa Clara Valley Water District

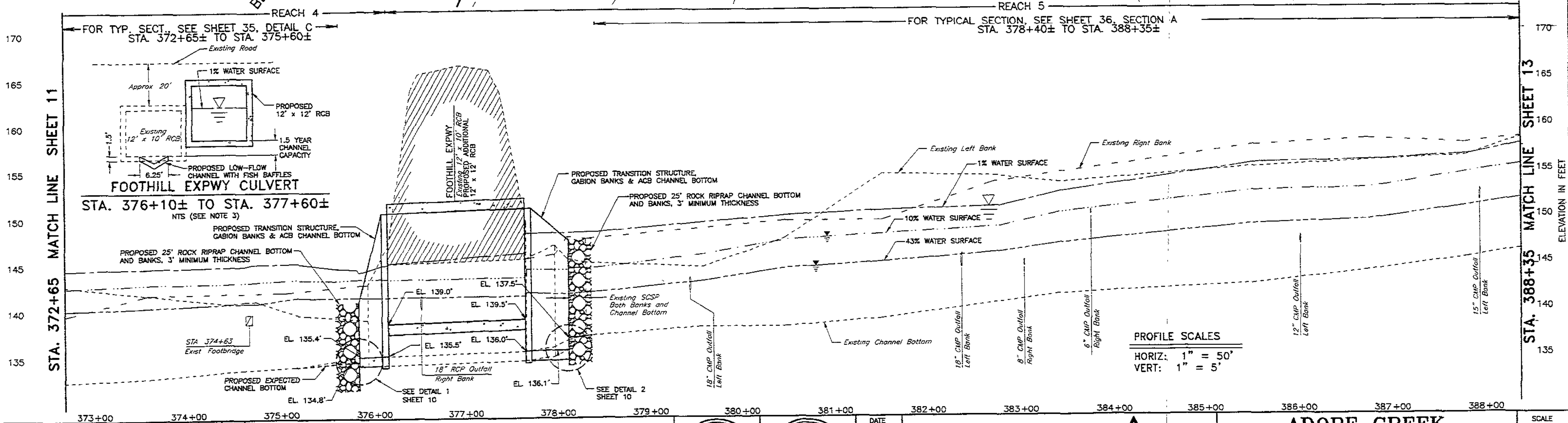
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO 43164

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET
11
12 OF 48




REACH 4
REACH 5
FOR TYP. SECT., SEE SHEET 35, DETAIL C STA. 372+65± TO STA. 375+60±
FOR TYPICAL SECTION, SEE SHEET 36, SECTION A STA. 378+40± TO STA. 388+35±
STA. 372+65 MATCH LINE SHEET 11
STA. 388+35 MATCH LINE SHEET 13
Existing Road
1% WATER SURFACE
Approx 20'
PROPOSED 12' x 12' RCB
Existing 12' x 10' RCB
1.5'
1.5 YEAR CHANNEL CAPACITY
6.25'
PROPOSED LOW-FLOW CHANNEL WITH FISH BAFFLES
FOOTHILL EXPWY CULVERT
STA. 376+10± TO STA. 377+60±
NTS (SEE NOTE 3)
FOOTHILL EXPWY
Existing 12' x 10' RCB
PROPOSED ADDITIONAL 12' x 12' RCB
PROPOSED TRANSITION STRUCTURE, GABION BANKS & ACB CHANNEL BOTTOM
PROPOSED 25' ROCK RIPRAP CHANNEL BOTTOM AND BANKS, 3' MINIMUM THICKNESS
EL. 139.0'
EL. 137.5'
EL. 139.5'
EL. 135.4'
EL. 135.5'
EL. 136.0'
EL. 136.1'
EL. 134.8'
STA 374+63 Exist Footbridge
PROPOSED EXPECTED CHANNEL BOTTOM
18" RCP Outfall Right Bank
SEE DETAIL 1 SHEET 10
SEE DETAIL 2 SHEET 10
Existing SCSP Both Banks and Channel Bottom
18" CMP Outfall Left Bank
Existing Left Bank
Existing Right Bank
1% WATER SURFACE
10% WATER SURFACE
43% WATER SURFACE
Existing Channel Bottom
18" CMP Outfall Left Bank
8" CMP Outfall Right Bank
6" CMP Outfall Right Bank
12" CMP Outfall Left Bank
15" CMP Outfall Left Bank
PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'
ELEVATION IN FEET
135
140
145
150
155
160
165
170
373+00
374+00
375+00
376+00
377+00
378+00
379+00
380+00
381+00
382+00
383+00
384+00
385+00
386+00
387+00
388+00

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Downstream of Station 376+15: 1% flowrate 2900 cfs, 10% flowrate 1600 cfs, 43% flowrate 710 cfs.
2. Upstream of station 376+15: 1% flowrate 2700 cfs, 10% flowrate 1400 cfs, 43% flowrate 570 cfs.
3. Reference orientation looking upstream.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE
2/22/99
DESIGN
PS/SS
DRAWN
SL/CM
CHECKED
SW

Santa Clara Valley Water District

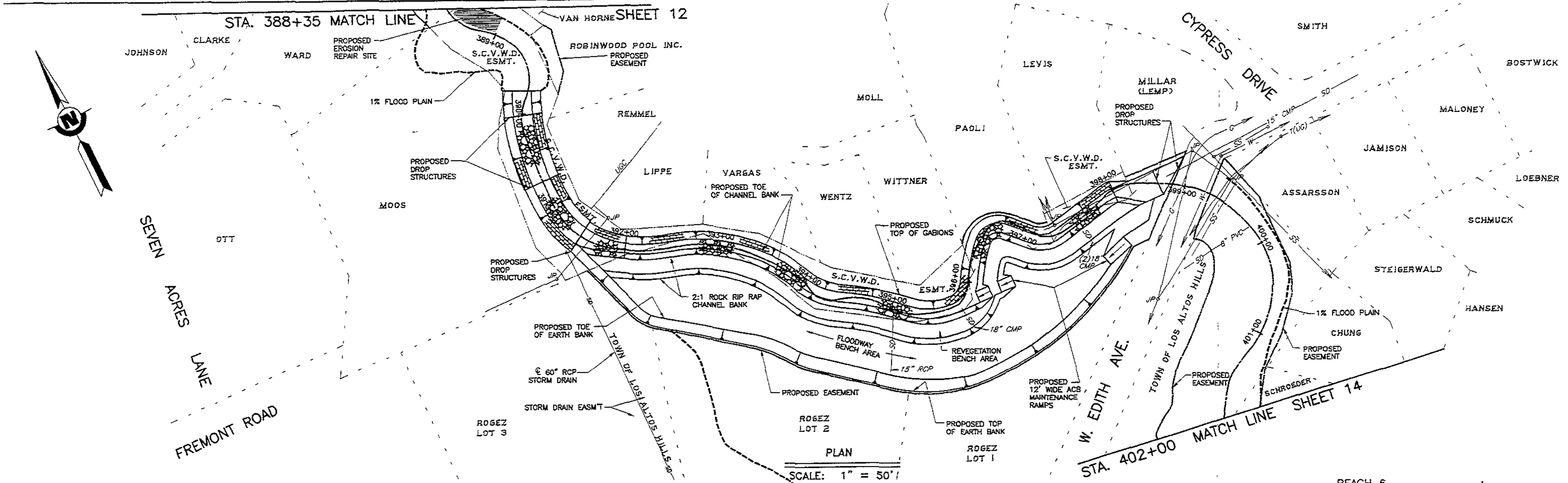
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

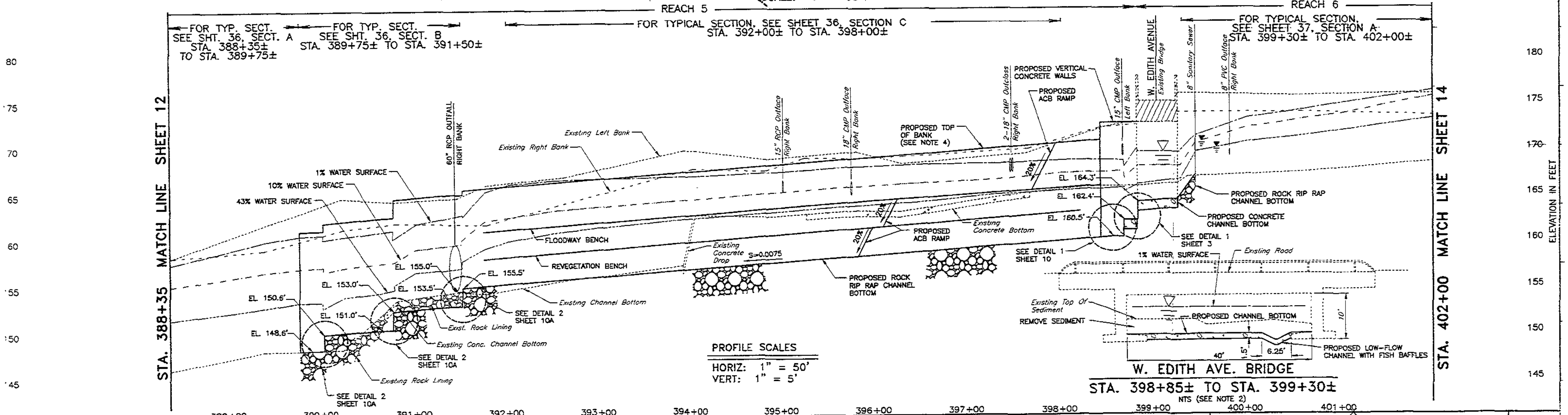
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE
AS SHOWN
SHEET
12
13 OF 48

DWGS\P\1010_101\D_SIZE\ACPP_012.dwg





DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flow rate 2700 cfs, 10% flow rate 1400 cfs, 43% flowrate 570 cfs.
2. Reference orientation looking upstream.
3. Top of bank: left bank gabions, right bank natural.

SCOTT M. WILSON No. 43184 EXP. 3/31/00 CIVIL

RANDALL R. TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

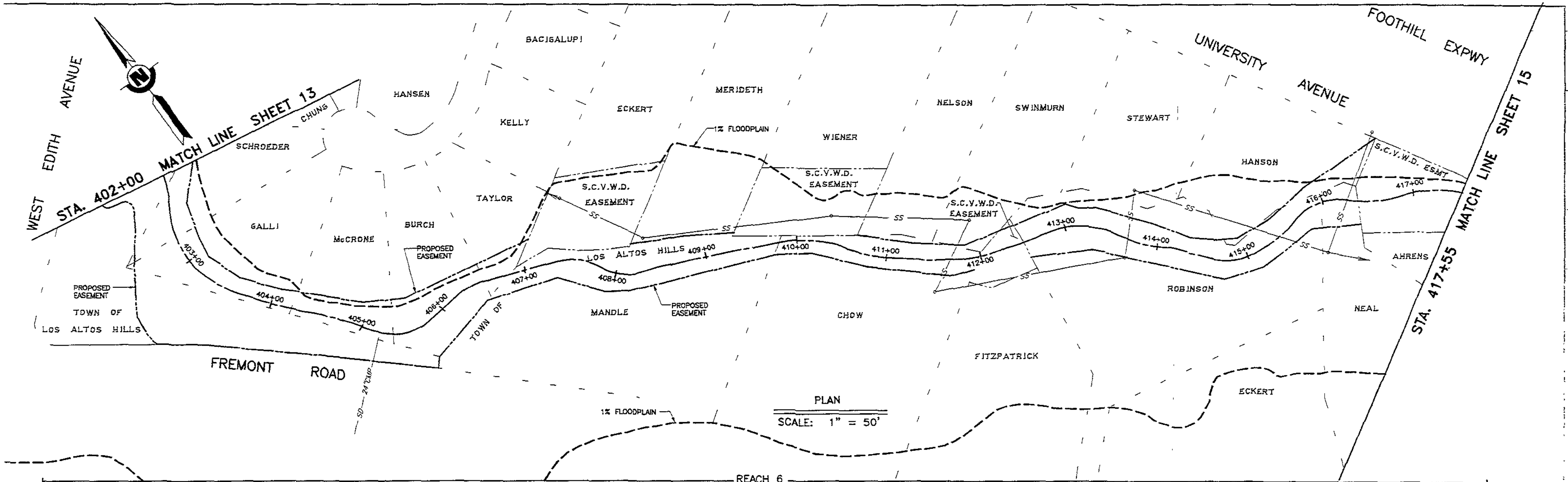
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

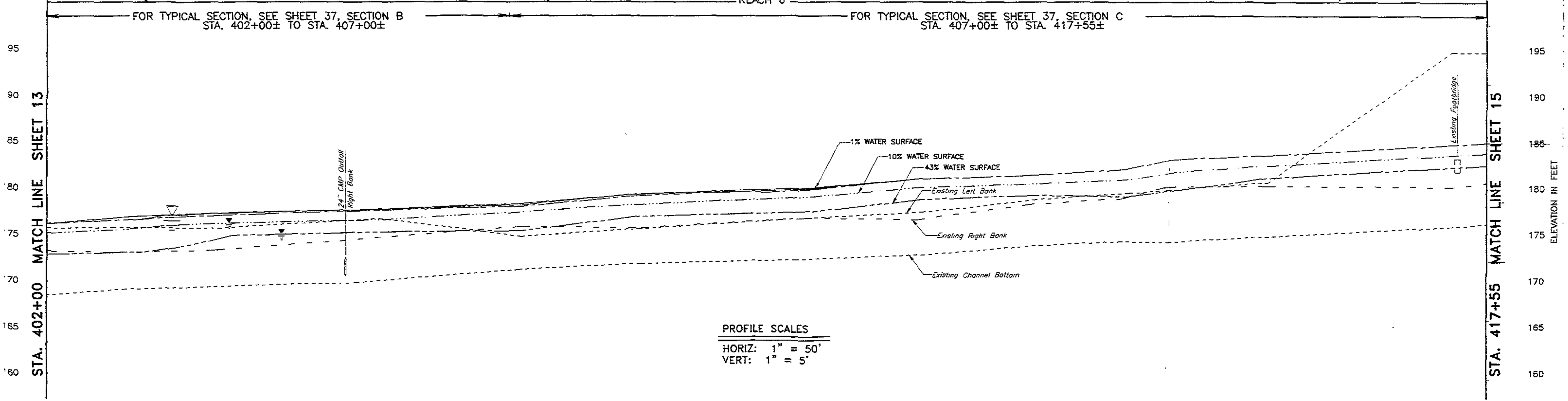
SCALE AS SHOWN
SHEET 13
14 OF 48

WGS\P\1010_101\D-SIZE\ACPP_013.dwg



PLAN

SCALE: 1" = 50'



PROFILE SCALES

HORIZ: 1" = 50'
VERT: 1" = 5'

V	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2700 cfs, 10% flowrate 1400 cfs, 43% flowrate 570 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE
4/27/98

DESIGN
PS/SS

DRAWN
SL/CM/JA

CHECKED
SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL

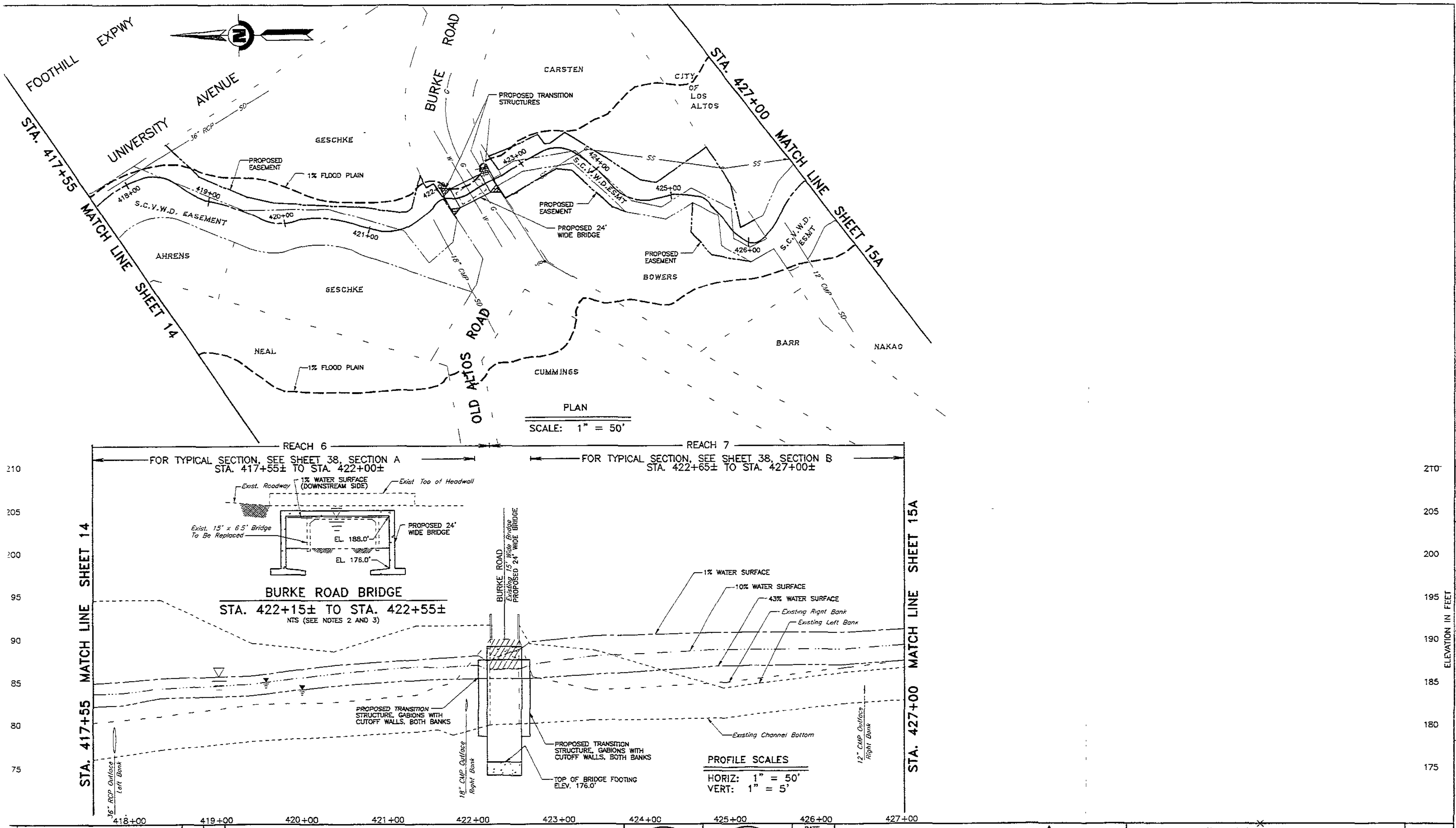
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE
AS SHOWN

SHEET
14
15 OF 48

)WGS\P\1010_101\D-SIZE\ACPP_014.dwg



DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2700 cfs. 10% flowrate 1400 cfs, 43% flowrate 570 cfs.
2. Reference orientation looking upstream.
3. Sediment will be backfield after construction to match existing grade of creek.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00
CIVIL

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01
CIVIL

DATE 2/22/98
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

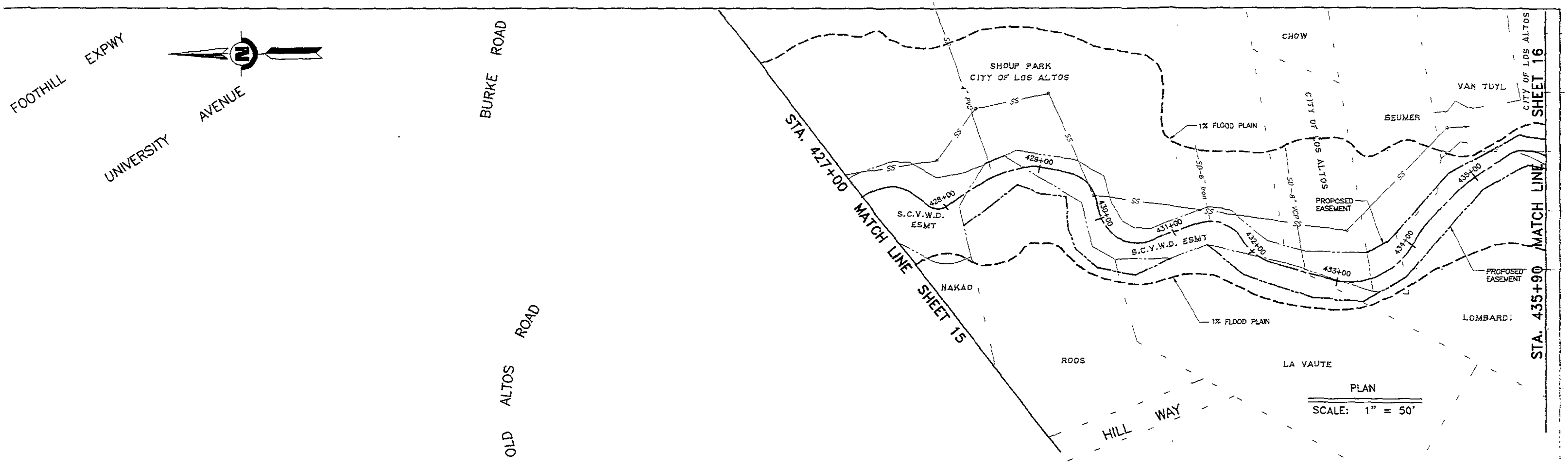
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO 25093

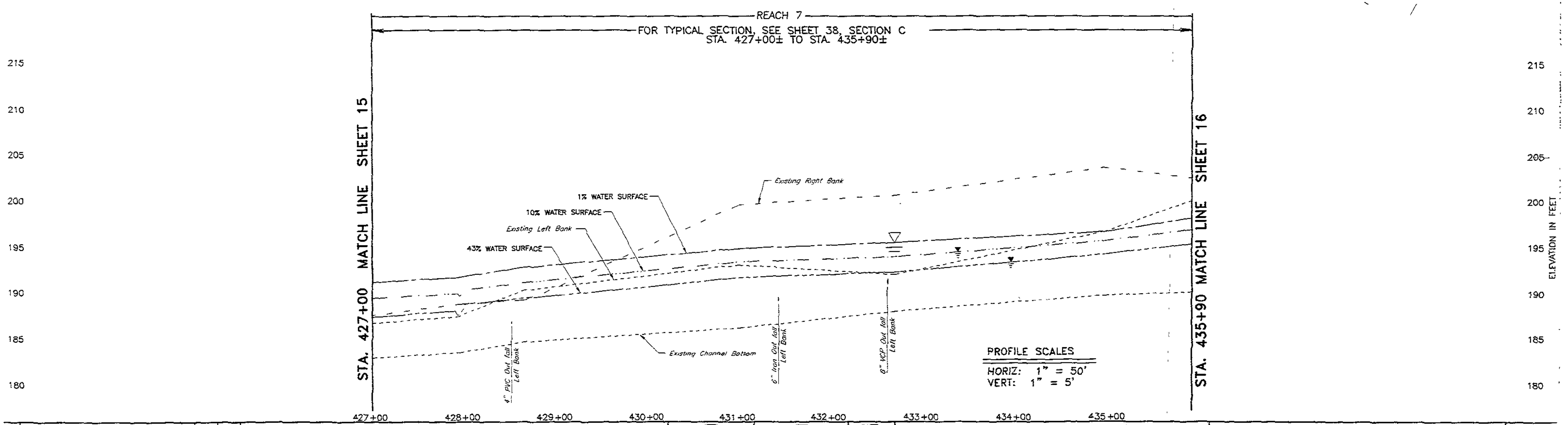
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN

SHEET 15
16 OF 48

VGS\P\1010_101\D-SIZE\ACPP_015.dwg





REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2700 cfs, 10% flowrate 1400 cfs, 43% flowrate 570 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00
CIVIL

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01
CIVIL

DATE 3/3/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

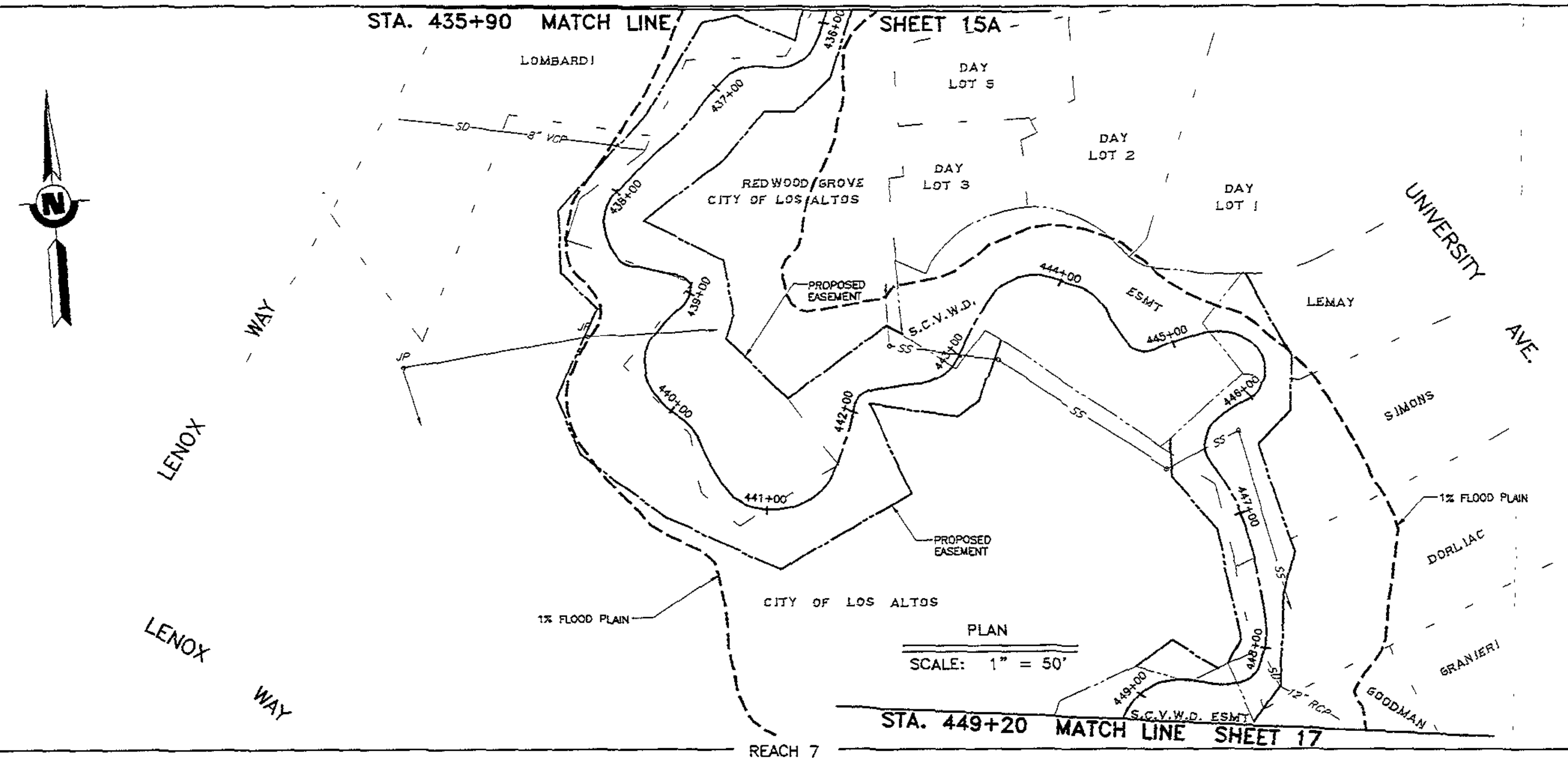
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

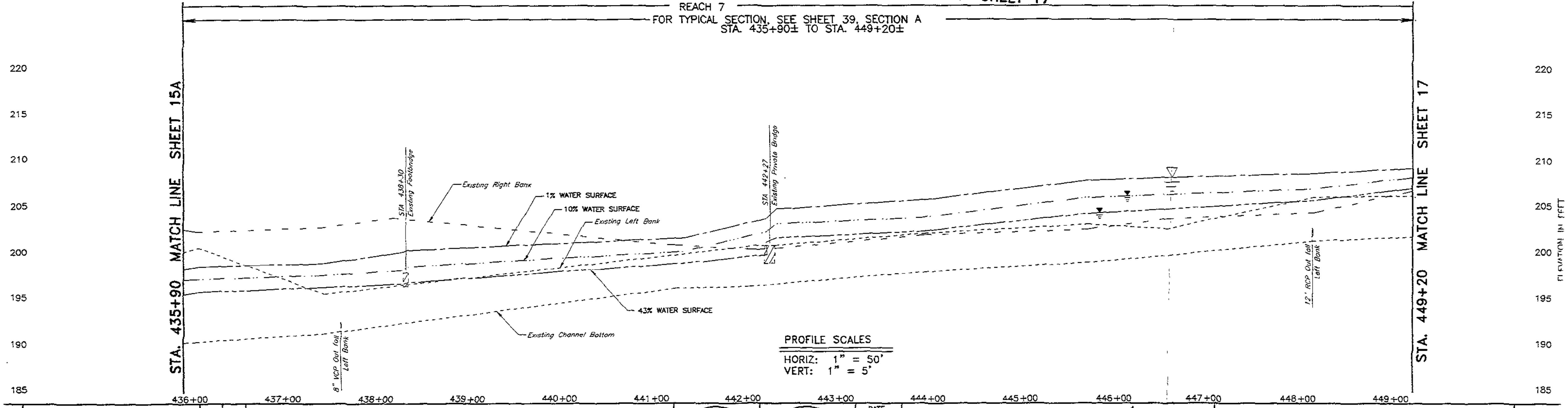
SCALE AS SHOWN
SHEET 15A
17 OF 48

DWGS\P\1010_101\D-SIZE\ACPP_15A.dwg



PLAN

SCALE: 1" = 50'



PROFILE SCALES

HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2700 cfs, 10% flowrate 1400 cfs, 43% flowrate 570 cfs.

SCOTT M. WILSON NO. 43184 EXP. 3/31/00 CIVIL

RANDALL R. TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

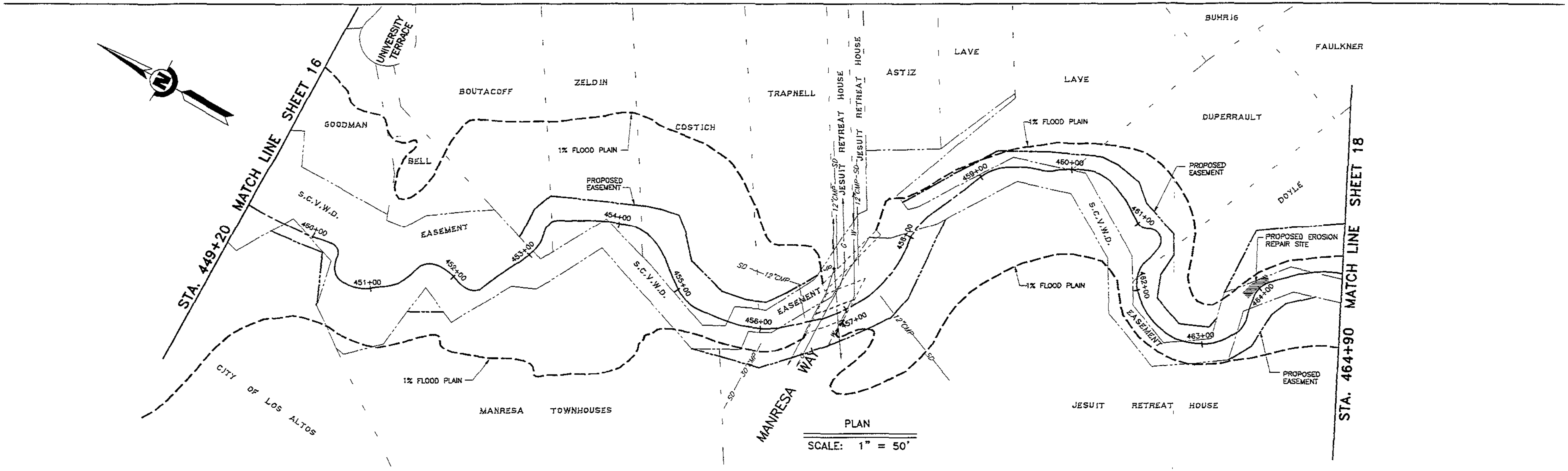
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

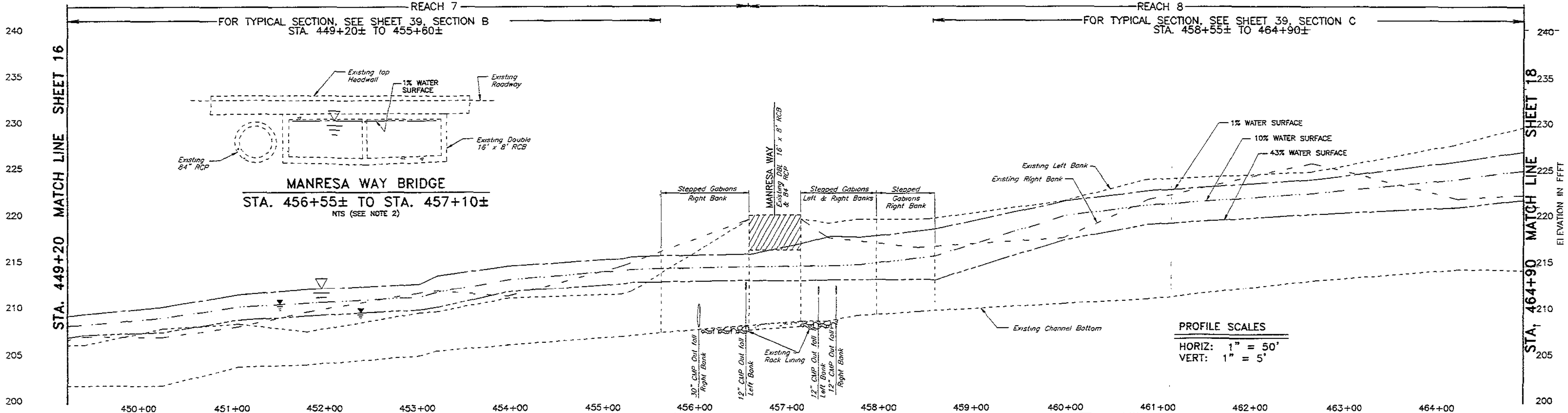
SCALE AS SHOWN
SHEET
16
18 OF 48

DWGS\P\1010_101\D-SIZE\ACPP_016.dwg



PLAN

SCALE: 1" = 50'


REACH 7
REACH 8
FOR TYPICAL SECTION, SEE SHEET 39, SECTION B STA. 449+20± TO 455+60±
FOR TYPICAL SECTION, SEE SHEET 39, SECTION C STA. 458+55± TO 464+90±
STA. 449+20 MATCH LINE SHEET 16
STA. 464+90 MATCH LINE SHEET 18
Existing top Headwall
1% WATER SURFACE
Existing Roadway
Existing 84" RCP
Existing Double 16' x 8' RCB
MANRESA WAY BRIDGE
STA. 456+55± TO STA. 457+10±
NTS (SEE NOTE 2)
Stepped Gabions Right Bank
MANRESA WAY Existing DBL 16' x 8' RCB & 84" RCP
Stepped Gabions Left & Right Banks
Stepped Gabions Right Bank
30" CMP Out fall Right Bank
12" CMP Out fall Left Bank
Existing Rock Lining
12" CMP Out fall Left Bank
12" CMP Out fall Right Bank
Existing Left Bank
Existing Right Bank
1% WATER SURFACE
10% WATER SURFACE
43% WATER SURFACE
Existing Channel Bottom
PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'
ELEVATION IN FEET
240
235
230
225
220
215
210
205
200
450+00
451+00
452+00
453+00
454+00
455+00
456+00
457+00
458+00
459+00
460+00
461+00
462+00
463+00
464+00

V	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. 1% flowrate 2700 cfs, 10% flowrate 1400 cfs, 43% flowrate 570 cfs.
2. Reference orientation looking upstream.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

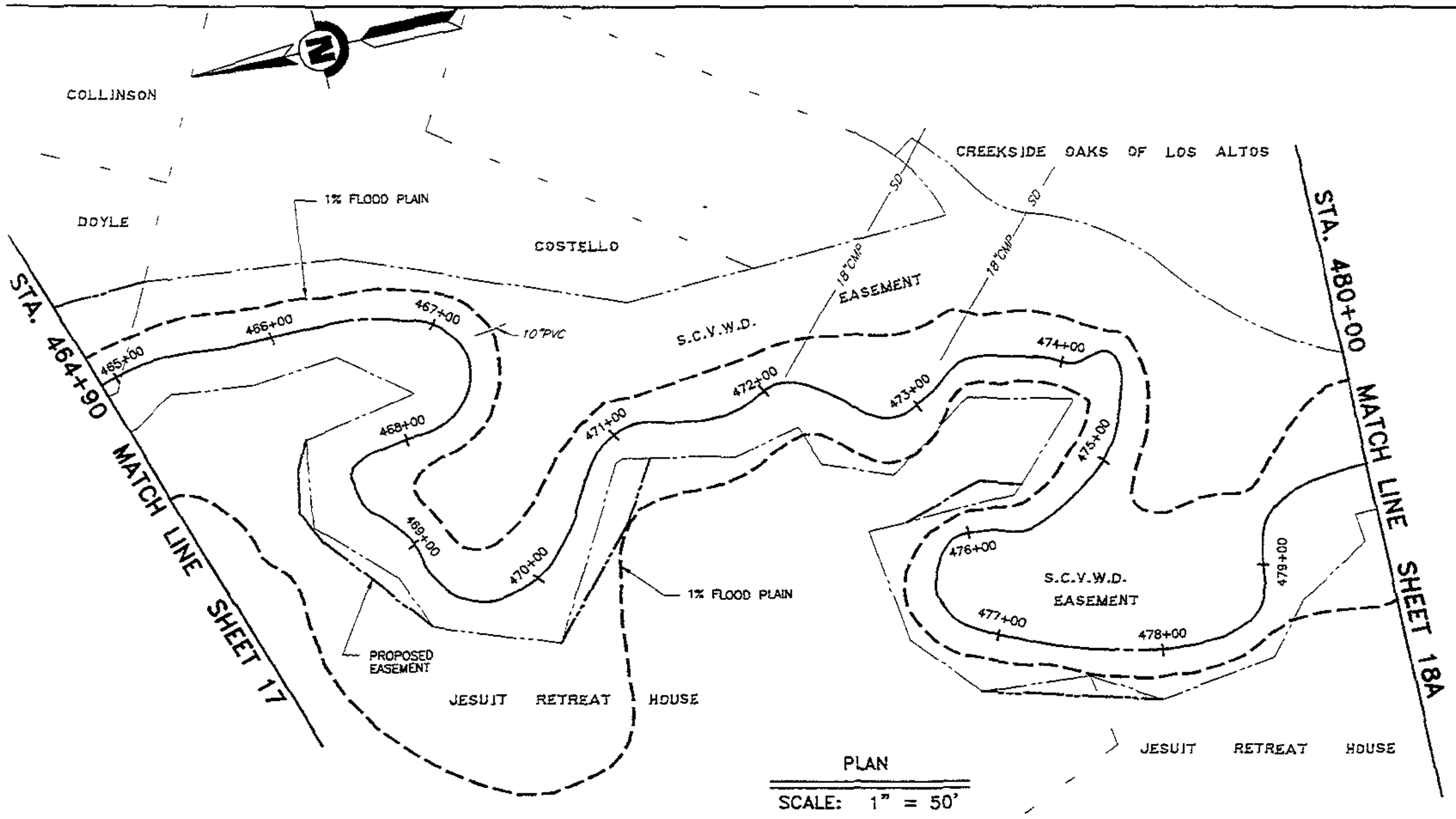
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

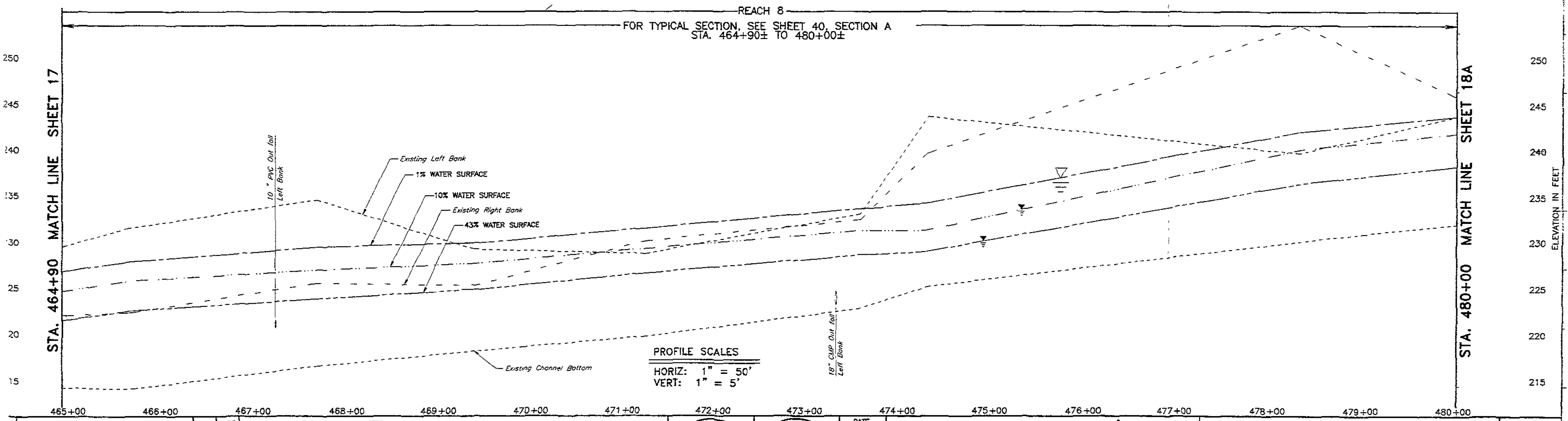
SCALE AS SHOWN
SHEET 17
19 OF 48

/WGS\P\1010_101\D-SIZE\ACPP_017.dwg



PLAN

SCALE: 1" = 50'



PROFILE SCALES

HORIZ: 1" = 50'
VERT: 1" = 5'

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2700 cfs., 10% flowrate 1400 cfs. 43% flowrate 570 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE	2/22/98
DESIGN	PS/SS/SB
DRAWN	CM/SL/JA
CHECKED	SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

ADOBE CREEK

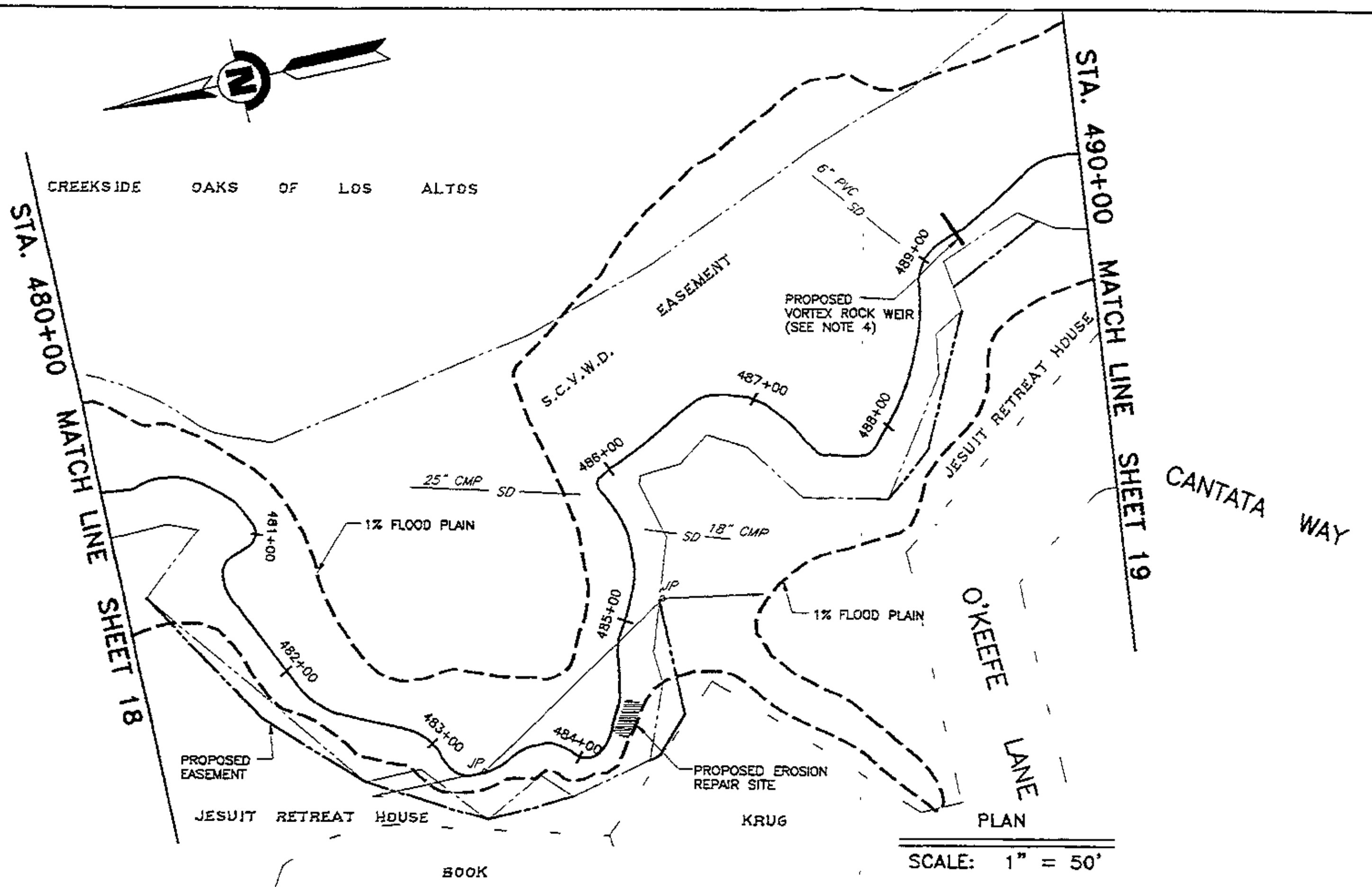
EL CAMINO REAL TO MOODY ROAD

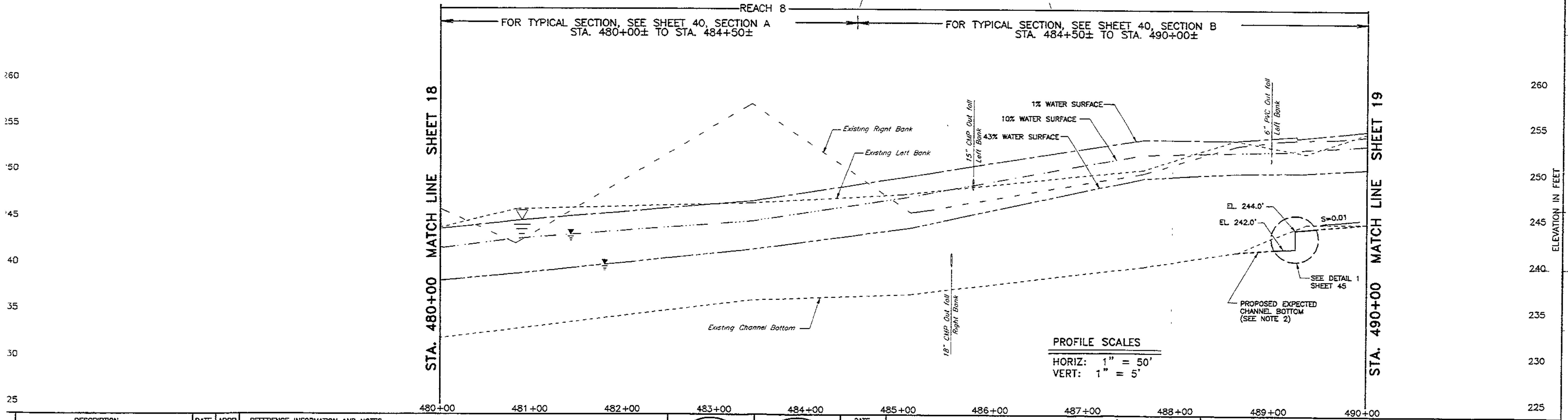
PLAN AND PROFILE

SCALE
AS SHOWN

SHEET
18

PS\P\1010_101\D-SIZE\ACPP_018.dwg




REACH 8
FOR TYPICAL SECTION, SEE SHEET 40, SECTION A STA. 480+00± TO STA. 484+50±
FOR TYPICAL SECTION, SEE SHEET 40, SECTION B STA. 484+50± TO STA. 490+00±
STA. 480+00 MATCH LINE SHEET 18
STA. 490+00 MATCH LINE SHEET 19
Existing Right Bank
Existing Left Bank
15" CMP Out fall Left Bank
1% WATER SURFACE
10% WATER SURFACE
43% WATER SURFACE
6" PVC Out fall Left Bank
EL. 244.0'
EL. 242.0'
S=0.01
SEE DETAIL 1 SHEET 45
PROPOSED EXPECTED CHANNEL BOTTOM (SEE NOTE 2)
Existing Channel Bottom
18" CMP Out fall Right Bank
PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'
ELEVATION IN FEET
260
255
250
245
240
235
230
225
480+00
481+00
482+00
483+00
484+00
485+00
486+00
487+00
488+00
489+00
490+00

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Downstream of station 484+50: 1% flowrate 2700 cfs, 10% flowrate 1400 cfs, 43% flowrate 570 cfs.
2. Upstream of station 484+50: 1% flowrate 2000 cfs, 10% flowrate 1100 cfs, 43% flowrate 490 cfs.
3. Channel bottom will be allowed to degrade to expected elevation.
4. See vortex rock weir details on sheet 45.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE
2/22/99
DESIGN
PS/SS/SB
DRAWN
CM/SL/JA
CHECKED
SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

PROJECT ENGINEER R.C.E. NO 43184

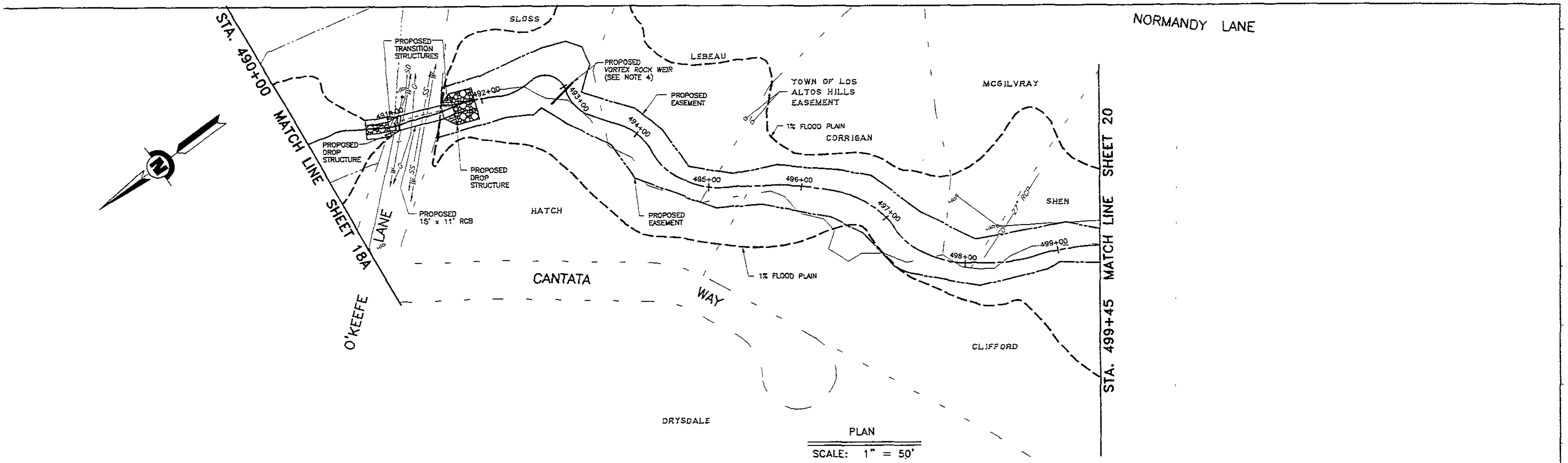
ENGINEERING APPROVAL

SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

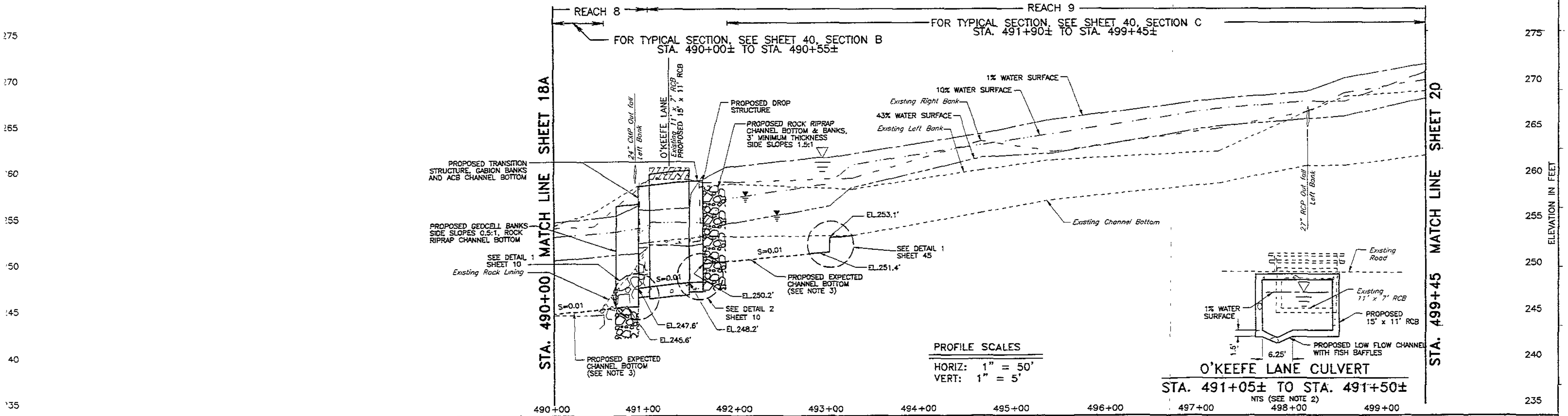
SCALE
AS SHOWN
SHEET
18A
21 OF 48

GS\P\1010_101\D-SIZE\ACPP_18A.dwg



PLAN

SCALE: 1" = 50'


REACH 8
REACH 9
FOR TYPICAL SECTION, SEE SHEET 40, SECTION B
STA. 490+00± TO STA. 490+55±
FOR TYPICAL SECTION, SEE SHEET 40, SECTION C
STA. 491+90± TO STA. 499+45±
STA. 490+00 MATCH LINE SHEET 18A
1% WATER SURFACE
10% WATER SURFACE
Existing Right Bank
43% WATER SURFACE
Existing Left Bank
24" CMP Out fall Left Bank
O'KEEFE LANE
Existing 11' x 7' RCB
PROPOSED 15' x 11' RCB
PROPOSED DROP STRUCTURE
PROPOSED ROCK RIPRAP CHANNEL BOTTOM & BANKS, 3' MINIMUM THICKNESS SIDE SLOPES 1.5:1
PROPOSED TRANSITION STRUCTURE, GABION BANKS AND ACB CHANNEL BOTTOM
PROPOSED GEOCELL BANKS SIDE SLOPES 0.5:1, ROCK RIPRAP CHANNEL BOTTOM
SEE DETAIL 1 SHEET 10
Existing Rock Lining
S=0.01
S=0.01
S=0.01
EL.253.1'
SEE DETAIL 1 SHEET 45
EL.251.4'
PROPOSED EXPECTED CHANNEL BOTTOM (SEE NOTE 3)
EL.250.2'
SEE DETAIL 2 SHEET 10
EL.248.2'
EL.247.6'
EL.246.6'
PROPOSED EXPECTED CHANNEL BOTTOM (SEE NOTE 3)
Existing Channel Bottom
27" RCP Out fall Left Bank
Existing Road
1% WATER SURFACE
Existing 11' x 7' RCB
PROPOSED 15' x 11' RCB
1.5'
6.25'
PROPOSED LOW FLOW CHANNEL WITH FISH BAFFLES
STA. 499+45 MATCH LINE SHEET 20
ELEVATION IN FEET
275
270
265
260
255
250
245
240
235
490+00
491+00
492+00
493+00
494+00
495+00
496+00
497+00
498+00
499+00

PROFILE SCALES

HORIZ: 1" = 50'
VERT: 1" = 5'

O'KEEFE LANE CULVERT

STA. 491+05± TO STA. 491+50±

NTS (SEE NOTE 2)

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. *1% flowrate 2000 cfs, 10% flowrate 1100 cfs, 43% flowrate 490 cfs.*
2. Reference orientation looking upstream.
3. Channel bottom will be allowed to degrade to expected elevation.
4. See vortex rock weir details on sheet 45.

SCOTT M. WILSON No. 43184 EXP. 3/31/00

RANDALL K. TALLEY No. 25093 EXP. 12/31/01

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

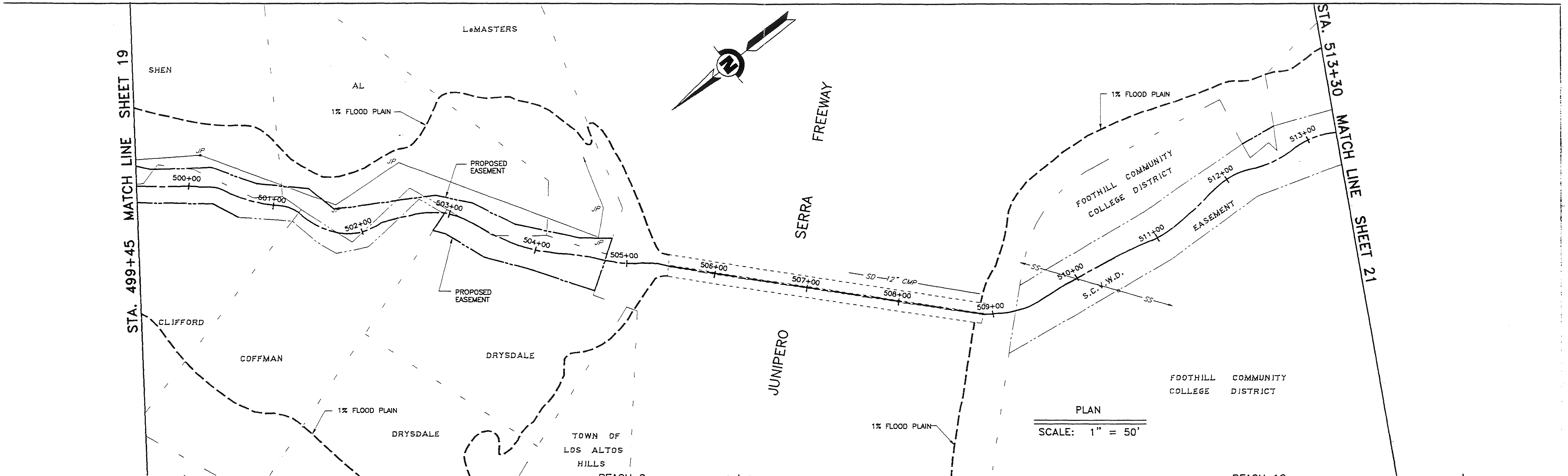
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

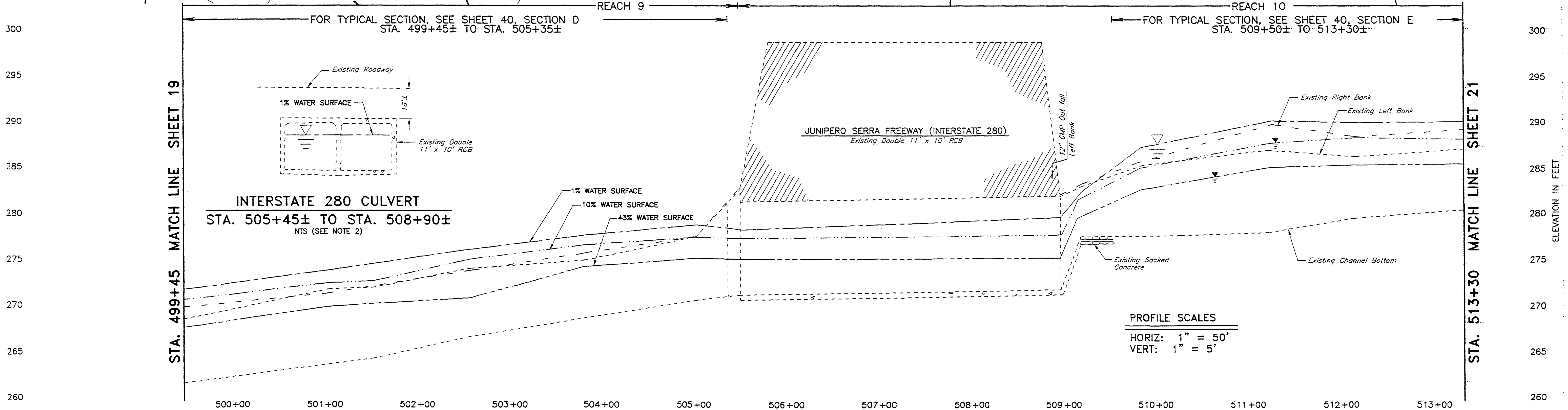
SCALE AS SHOWN

SHEET 19

22 OF 48

WGS\P\1010_101\D-SIZE\ACPP_019.dwg





EV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2000 cfs., 10% flowrate 1100 cfs, 43% flowrate 490 cfs.
2. Reference orientation looking upstream.

SCOTT M. WILSON NO. 43184 EXP. 3/31/00

RANDALL R. TALLEY No. 25093 EXP. 12/31/01

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL

SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK

EL CAMINO REAL TO MOODY ROAD

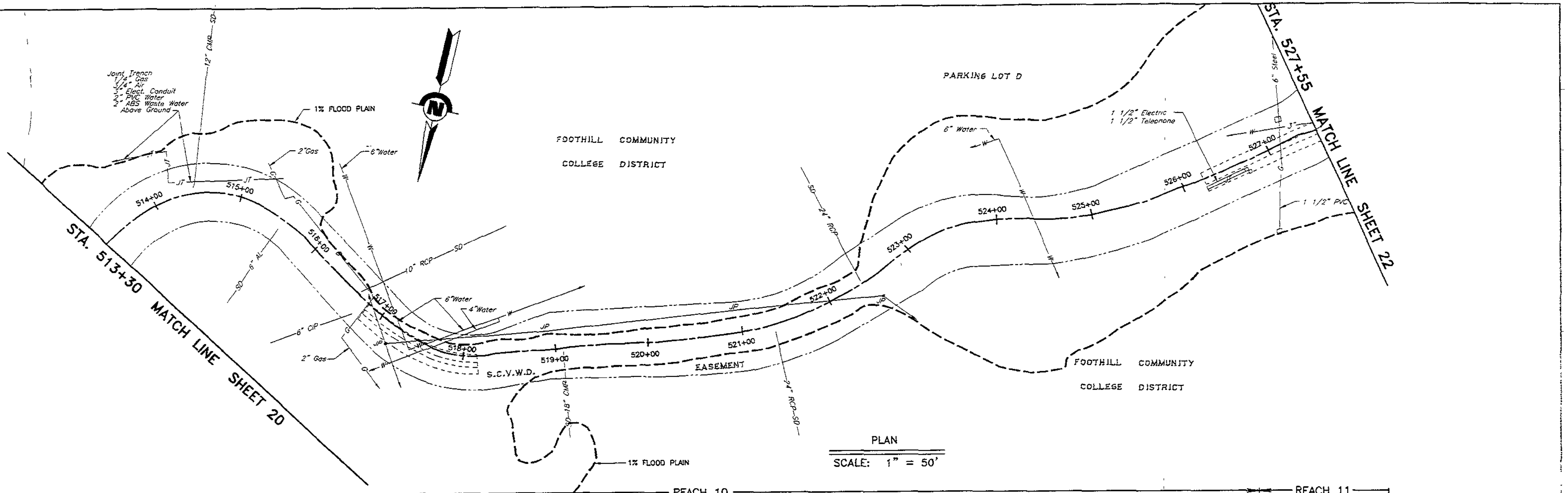
PLAN AND PROFILE

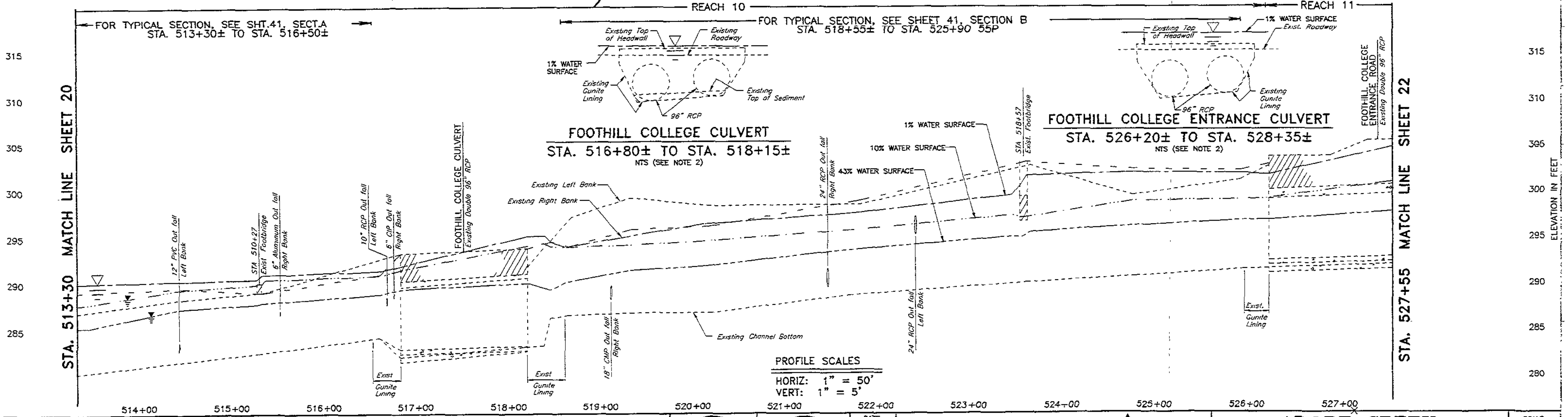
SCALE AS SHOWN

SHEET 20

23 OF 48

DWGS\P\1010_101\D-SIZE\ACPP_020.dwg




REACH 10
REACH 11
FOR TYPICAL SECTION, SEE SHT.41, SECT.A
STA. 513+30± TO STA. 516+50±
FOR TYPICAL SECTION, SEE SHEET 41, SECTION B
STA. 518+55± TO STA. 525+90 55P
Existing Top of Headwall
Existing Roadway
1% WATER SURFACE
Existing Gunite Lining
Existing Top of Sediment
96" RCP
FOOTHILL COLLEGE CULVERT
STA. 516+80± TO STA. 518+15±
NTS (SEE NOTE 2)
1% WATER SURFACE
Exist. Roadway
Existing Top of Headwall
Existing Gunite Lining
96" RCP
FOOTHILL COLLEGE ENTRANCE CULVERT
STA. 526+20± TO STA. 528+35±
NTS (SEE NOTE 2)
FOOTHILL COLLEGE ENTRANCE ROAD Existing Double 96" RCP
STA. 513+30 MATCH LINE SHEET 20
STA. 527+55 MATCH LINE SHEET 22
12" PVC Out fall Left Bank
STA. 510+27 Exist Footbridge
6" Aluminum Out fall Right Bank
10" RCP Out fall Left Bank
6" CIP Out fall Right Bank
FOOTHILL COLLEGE CULVERT Existing Double 96" RCP
Existing Left Bank
Existing Right Bank
24" RCP Out fall Right Bank
1% WATER SURFACE
10% WATER SURFACE
43% WATER SURFACE
STA. 518+57 Exist. Footbridge
24" RCP Out fall Left Bank
18" CMP Out fall Right Bank
Existing Channel Bottom
Exist Gunite Lining
Exist Gunite Lining
Exist. Gunite Lining
PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'
ELEVATION IN FEET
315
310
305
300
295
290
285
280
514+00
515+00
516+00
517+00
518+00
519+00
520+00
521+00
522+00
523+00
524+00
525+00
526+00
527+00

EV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2000 cfs., 10% flowrate 1100 cfs, 43% flowrate 490 cfs.
2. Reference orientation looking upstream.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00
CIVIL

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01
CIVIL

DATE
2/22/98

DESIGN
PS/SS

DRAWN
SL/CM/JA

CHECKED
SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

PROJECT ENGINEER R.C.E. NO 43184

ENGINEERING APPROVAL

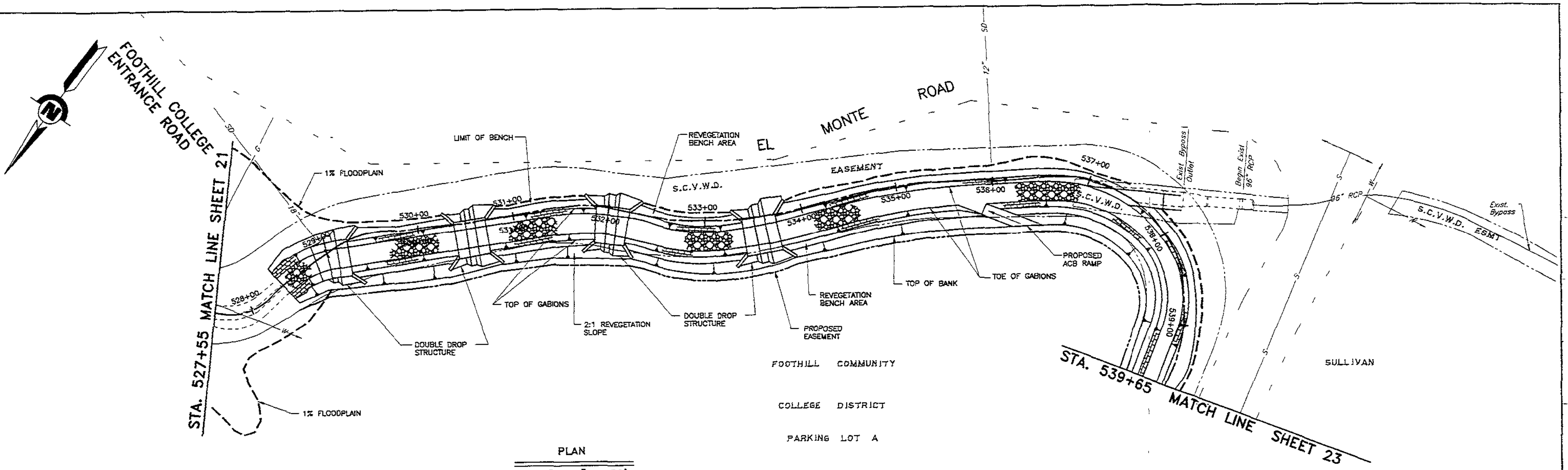
SUPERVISING ENGINEER R.C.E. NO 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE
AS SHOWN

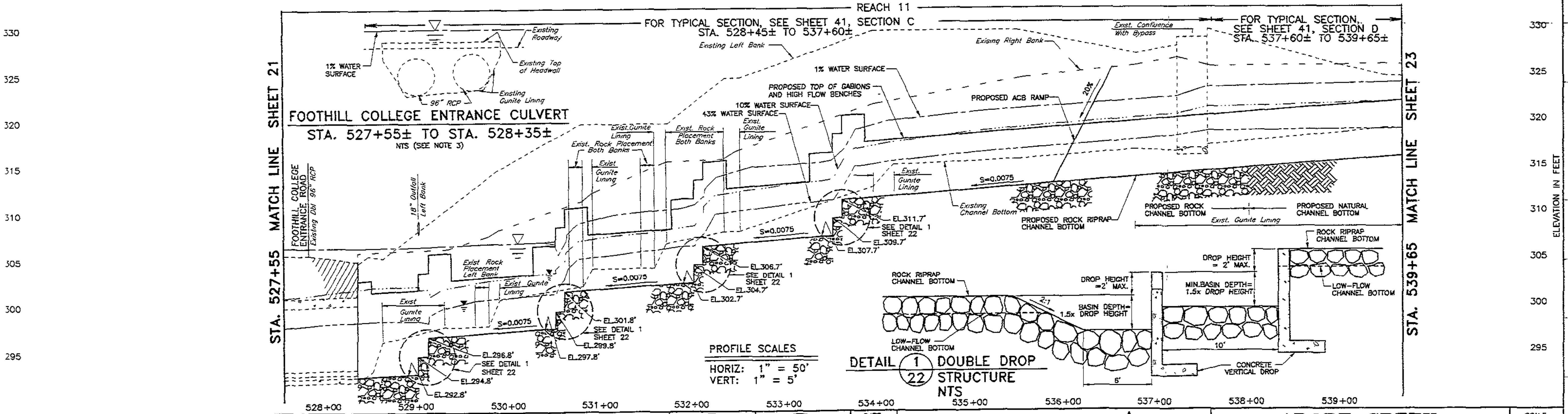
SHEET
21
24 OF 48

DWGS\P\1010_101\D-SIZE\ACPP_021.dwg



PLAN

SCALE: 1" = 50'



/	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Downstream of 537+40: 1% flowrate 2000 cfs, 10% flowrate 1100 cfs, 43% flowrate 490 cfs.
2. Upstream of 537+40: Main channel – 1% flowrate 1100 cfs, 10% flowrate 600 cfs, 43% flowrate 110 cfs.
   Bypass channel – 1% flowrate 900 cfs, 10% flowrate 500 cfs, 43% flowrate 380 cfs.
3. Reference orientation looking upstream.

SCOTT M. WILSON No. 43184 EXP. 3/31/00 CIVIL

RANDALL R. TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE 2/22/98
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

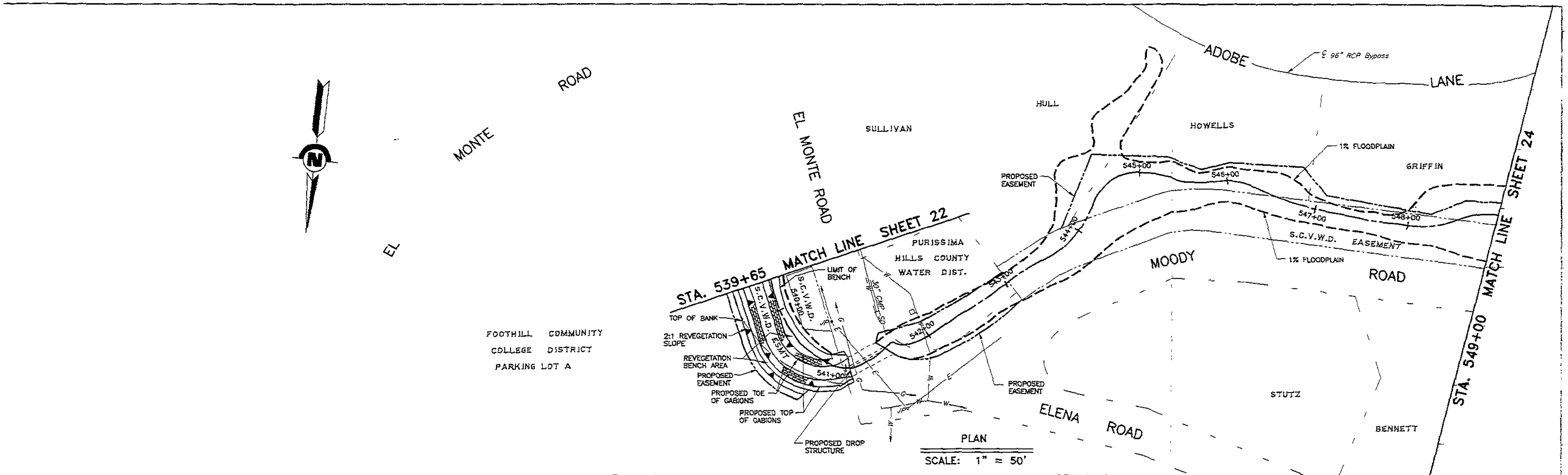
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN

SHEET 22

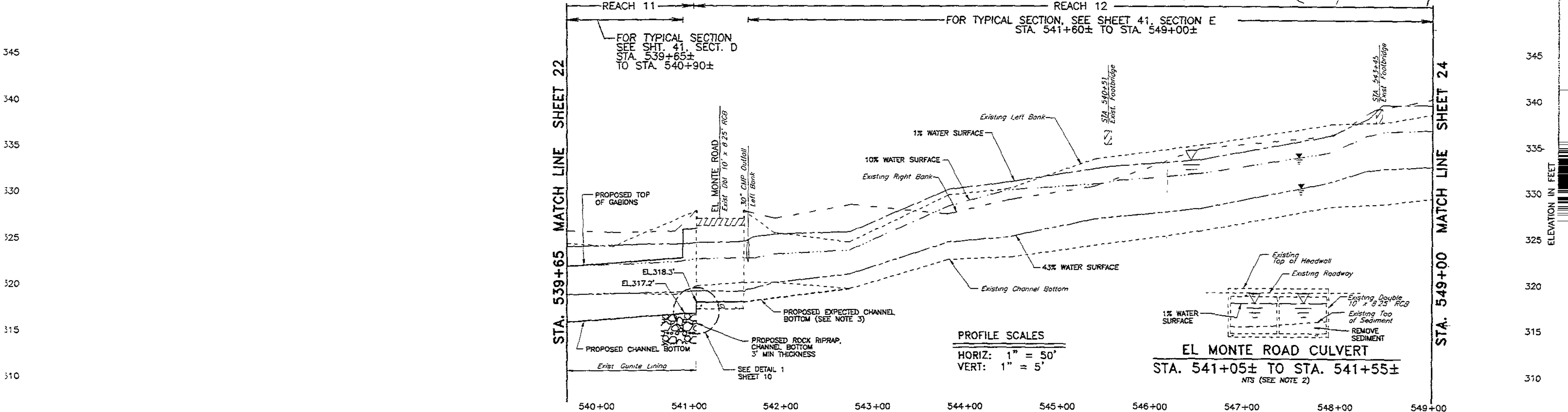
25 OF 48

WGS\P\1010_101\D-SIZE\ACPP_022.dwg



PLAN

SCALE: 1" = 50'



PROFILE SCALES

HORIZ: 1" = 50'
VERT: 1" = 5'

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Main channel – 1% flowrate 1100 cfs, 10% flowrate 600 cfs, 43% flowrate 110 cfs.
   Bypass channel – 1% flowrate 900 cfs, 10% flowrate 500 cfs, 43% flowrate 380 cfs.
2. Reference orientation looking upstream.
3. Channel bottom will be allowed to degrade to expected elevation.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE
2/22/98
DESIGN
PS/SS
DRAWN
SL/CM/JA
CHECKED
SW

Santa Clara Valley Water District

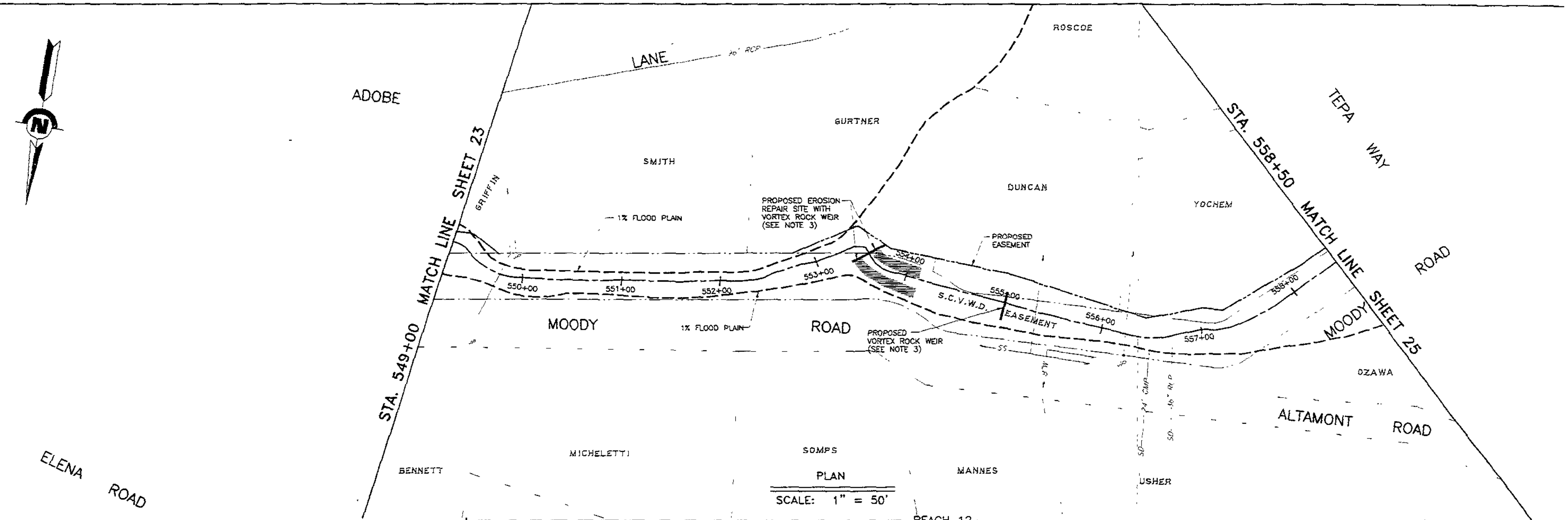
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

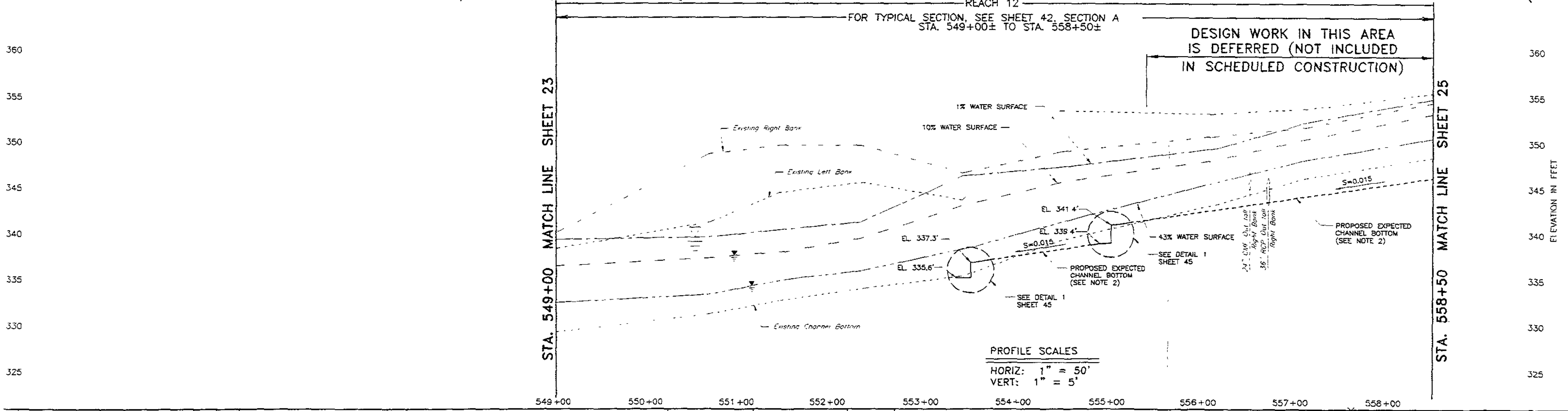
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE
AS SHOWN
SHEET
23
26 OF 48

WGS\P\1010_101\D-SIZE\ACPP_023.dwg





V	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Main channel – 1% flowrate 1100 cfs., 10% flowrate 600 cfs, 43% flowrate 110 cfs.
   Bypass channel – 1% flowrate 900 cfs., 10% flowrate 500 cfs, 43% flowrate 380 cfs.
2. Channel bottom will be allowed to degrade to expected elevation.
3. See vortex rock weir details on sheet 45

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/98
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

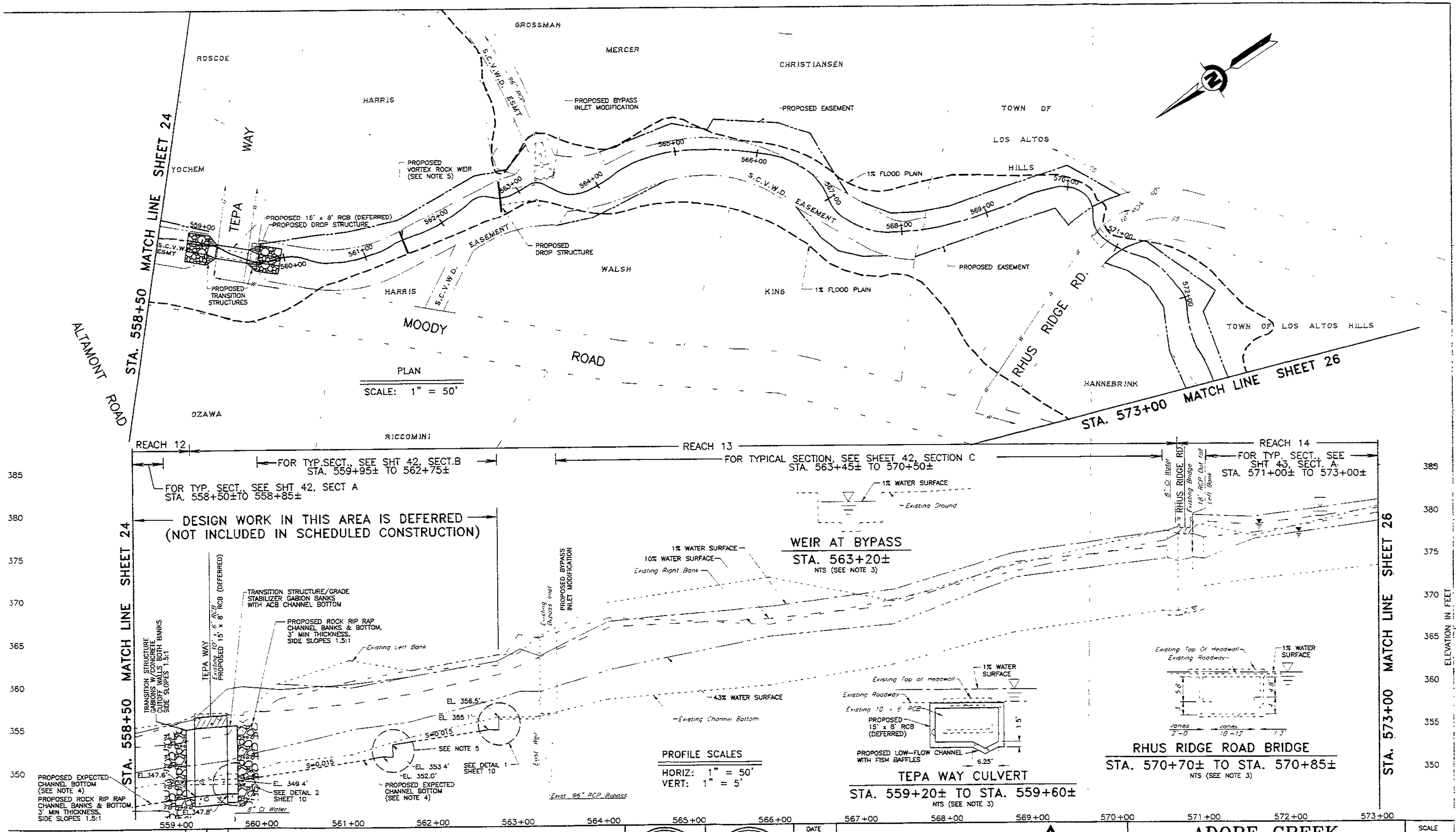
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET 24
27 OF 48

)WGS\P\1010_101\D-SIZE\ACPP_024.dwg



DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Downstream of station 563+30:
   Main channel – 1% flowrate 1100 cfs, 10% flowrate 600 cfs, 43% flowrate 110 cfs.
   Bypass channel – 1% flowrate 900 cfs, 10% flowrate 500 cfs, 43% flowrate 380 cfs.
2. Upstream of station 563+30:
   1% flowrate 2000 cfs, 10% flowrate 1100 cfs, 43% flowrate 490 cfs.
3. Reference orientation looking upstream.
4. Channel bottom will be allowed to degrade to expected elevation.
5. See vortex rock weir details on sheet 45

SCOTT M. WILSON NO. 43184 EXP. 3/31/00 CIVIL

RANDALL R. TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

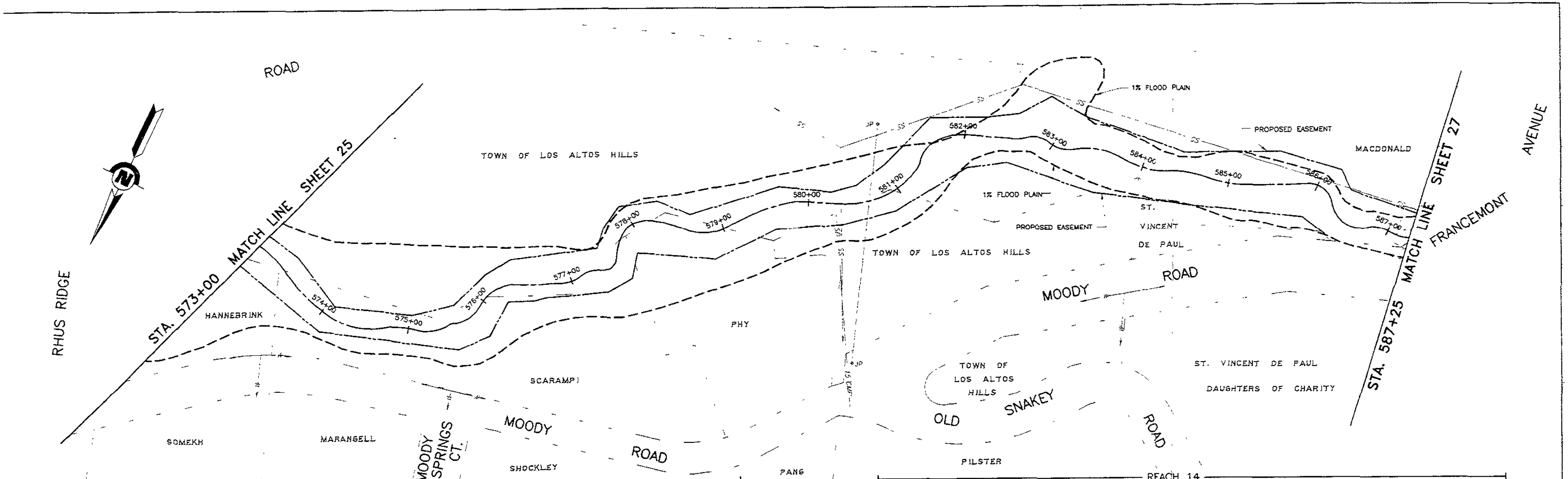
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

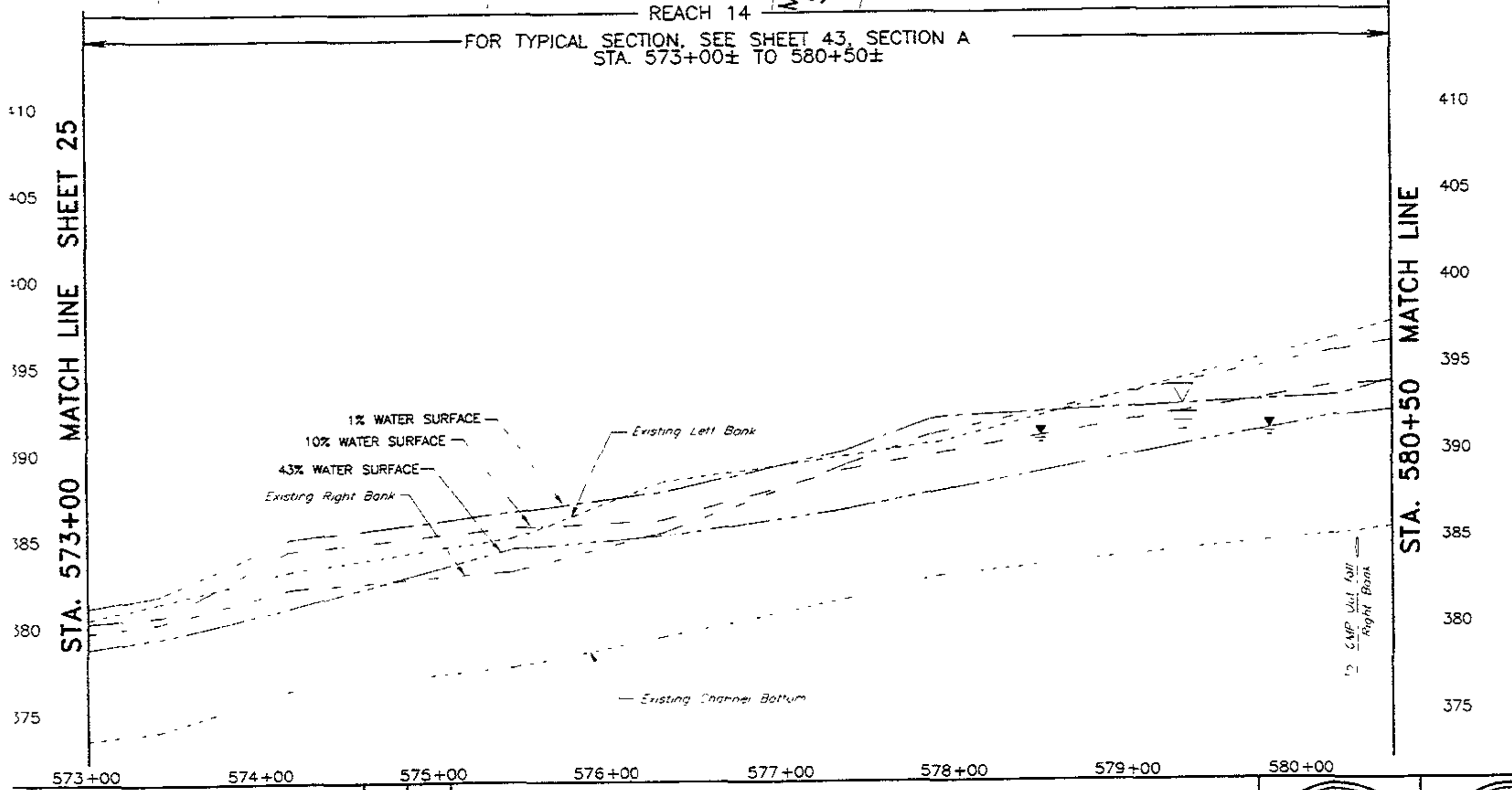
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

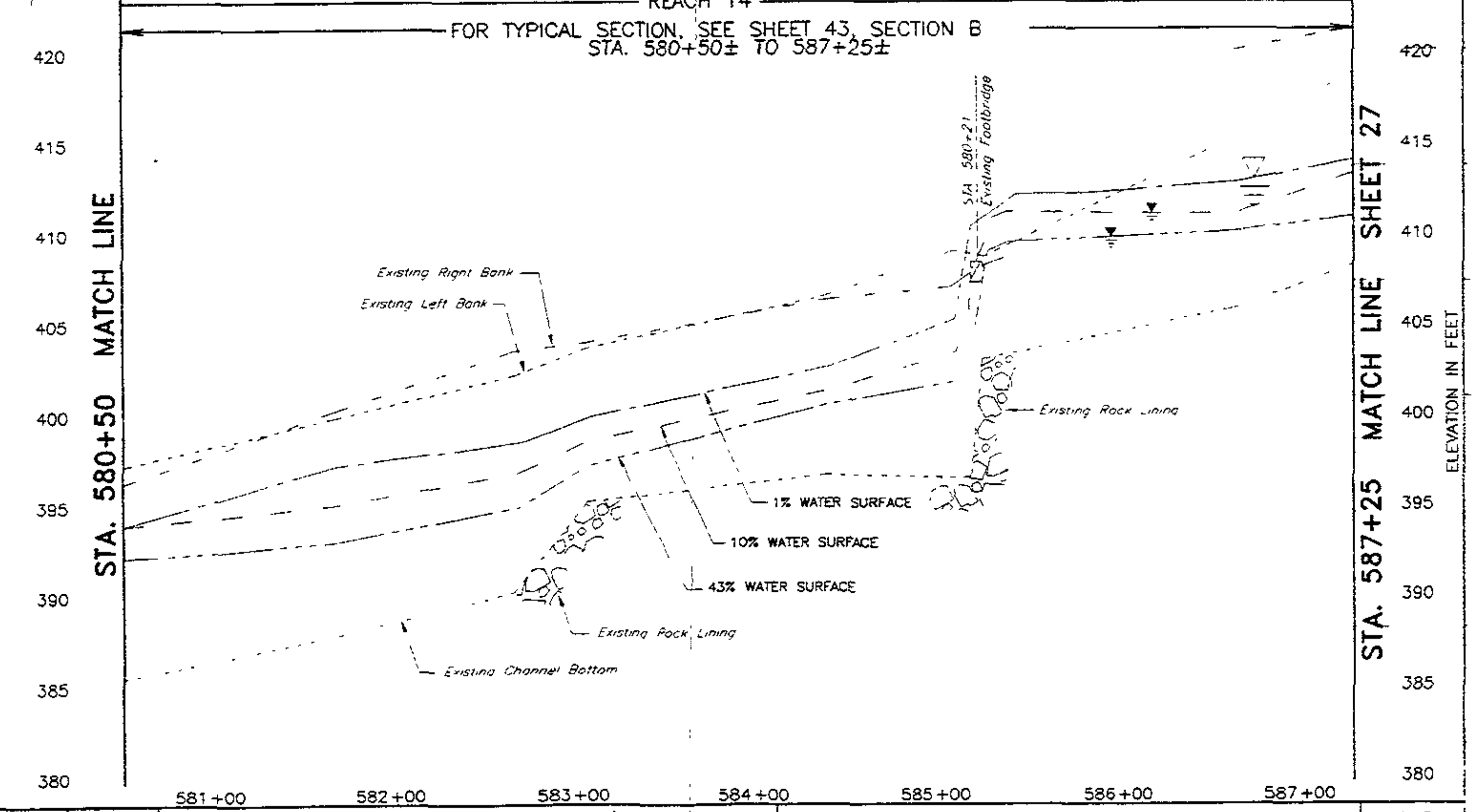
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET 25
28 OF 48

)WGS\P\1010_101\D-SIZE\ACPP_025.dwg







DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 2000 cfs. 10% flowrate 1100 cfs. 43% flowrate 490 cfs.

SCOTT M. WILSON NO. 43184 EXP. 3/31/00

RANDALL R. TALLEY No. 25093 EXP. 12/31/01

DATE
2/22/99

DESIGN
PS/SS

DRAWN
SL/CM/JA

CHECKED
SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL

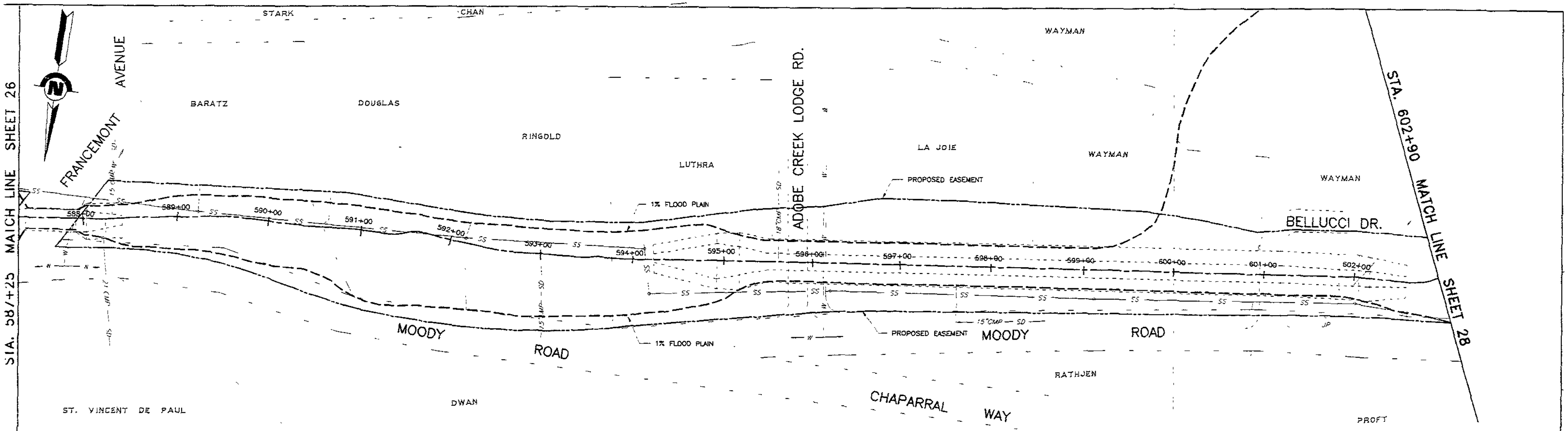
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

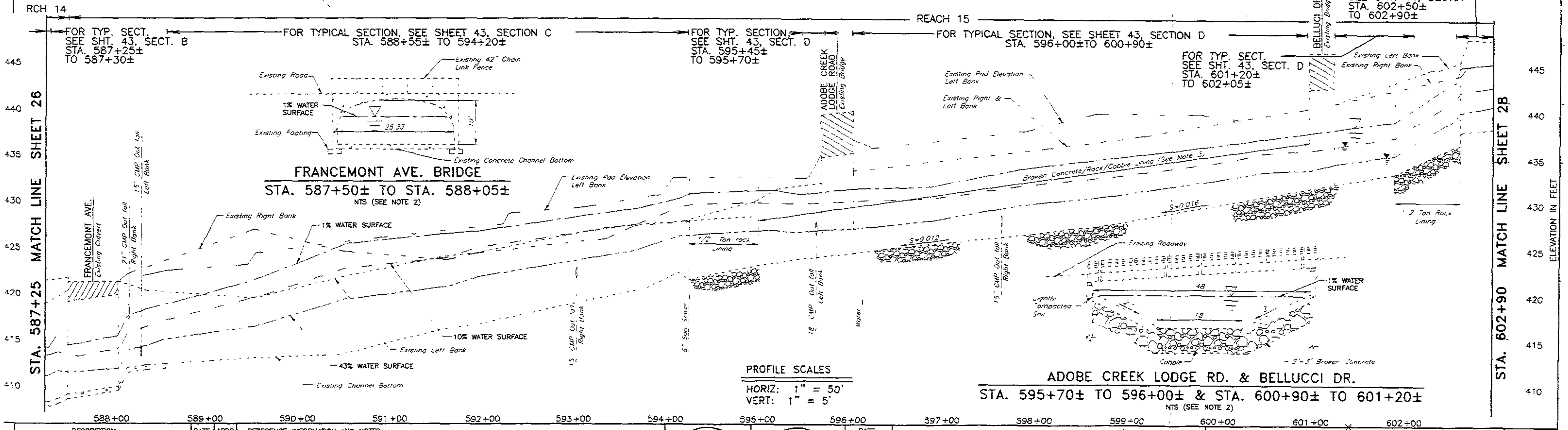
SCALE
AS SHOWN

SHEET
26
29 OF 48

VGS\P\1010_101\D-SIZE\ACPP_026



PLAN
SCALE: 1" = 50'


RCH 14
REACH 15
FOR TYP. SECT. SEE SHT. 43, SECT. B STA. 587+25± TO 587+30±
FOR TYPICAL SECTION, SEE SHEET 43, SECTION C STA. 588+55± TO 594+20±
FOR TYP. SECTION SEE SHT. 43, SECT. D STA. 595+45± TO 595+70±
FOR TYPICAL SECTION, SEE SHEET 43, SECTION D STA. 596+00± TO 600+90±
FOR TYP. SECT. SEE SHT. 43, SECT. D STA. 601+20± TO 602+05±
FOR TYP. SECT. SEE SHT. 44, SECT.A STA. 602+50± TO 602+90±
BELLUCCI DR Existing Bridge
ADOBE CREEK LODGE ROAD Existing Bridge
Existing Road
Existing 42" Chain Link Fence
1% WATER SURFACE
Existing Footing
25.33
10'
Existing Concrete Channel Bottom
FRANCEMONT AVE. BRIDGE
STA. 587+50± TO STA. 588+05±
NTS (SEE NOTE 2)
Existing Pad Elevation Left Bank
Existing Right Bank
1% WATER SURFACE
FRANCEMONT AVE. Existing Culvert
21" CMP Out fall Right Bank
15" CMP Out fall Left Bank
10% WATER SURFACE
Existing Left Bank
43% WATER SURFACE
Existing Channel Bottom
15" CMP Out fall Right Bank
6" San Sewer
1/2 Ton rock Lining
18" CMP Out fall Left Bank
Water
S=0.012
15" CMP Out fall Right Bank
Existing Pad Elevation Left Bank
Existing Right & Left Bank
Broken Concrete/Rock/Cobble Lining (See Note 3)
S=0.016
Existing Roadway
Existing Left Bank
Existing Right Bank
2 Ton Rock Lining
1% WATER SURFACE
48
18
2
Lightly Compacted Soil
Cobble
2'-3' Broken Concrete
ADOBE CREEK LODGE RD. & BELLUCCI DR.
STA. 595+70± TO 596+00± & STA. 600+90± TO 601+20±
NTS (SEE NOTE 2)
445
440
435
430
425
420
415
410
ELEVATION IN FEET
MATCH LINE SHEET 26
STA. 587+25
MATCH LINE SHEET 28
STA. 602+90
588+00
589+00
590+00
591+00
592+00
593+00
594+00
595+00
596+00
597+00
598+00
599+00
600+00
601+00
602+00

PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 1800 cfs, 10% flowrate 900 cfs, 43% flowrate 330 cfs.
2. Reference orientation looking upstream
3. Channel bottom has 4' wide bands of 1/4 ton rock at 100' intervals

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE
2/22/98

DESIGN
PS/SS

DRAWN
SL/CM/JA

CHECKED
SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

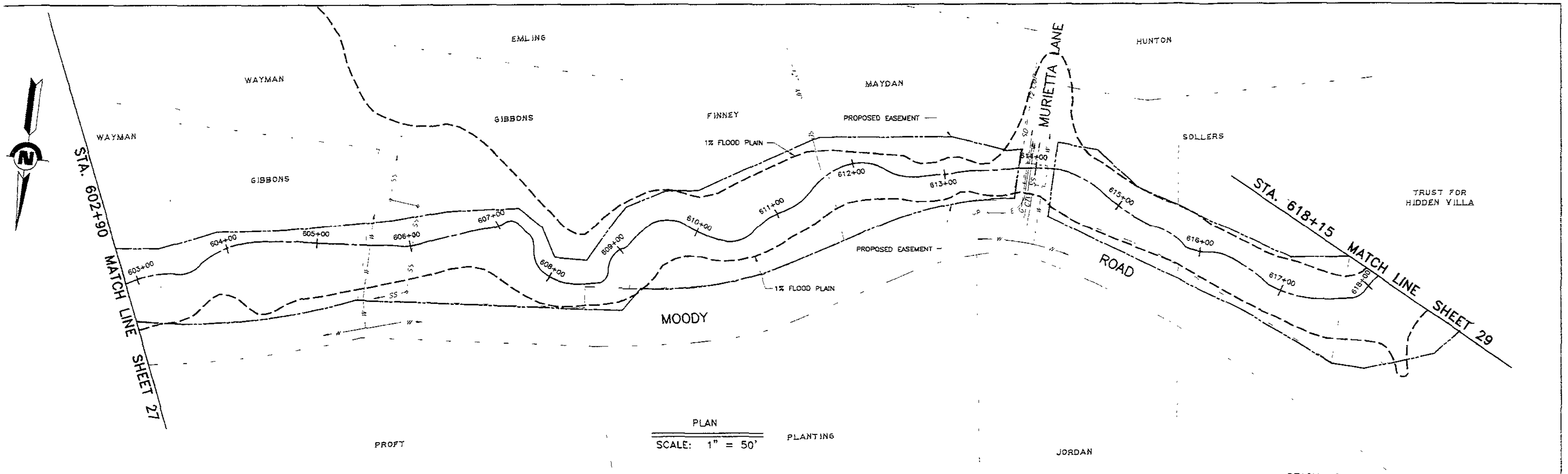
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

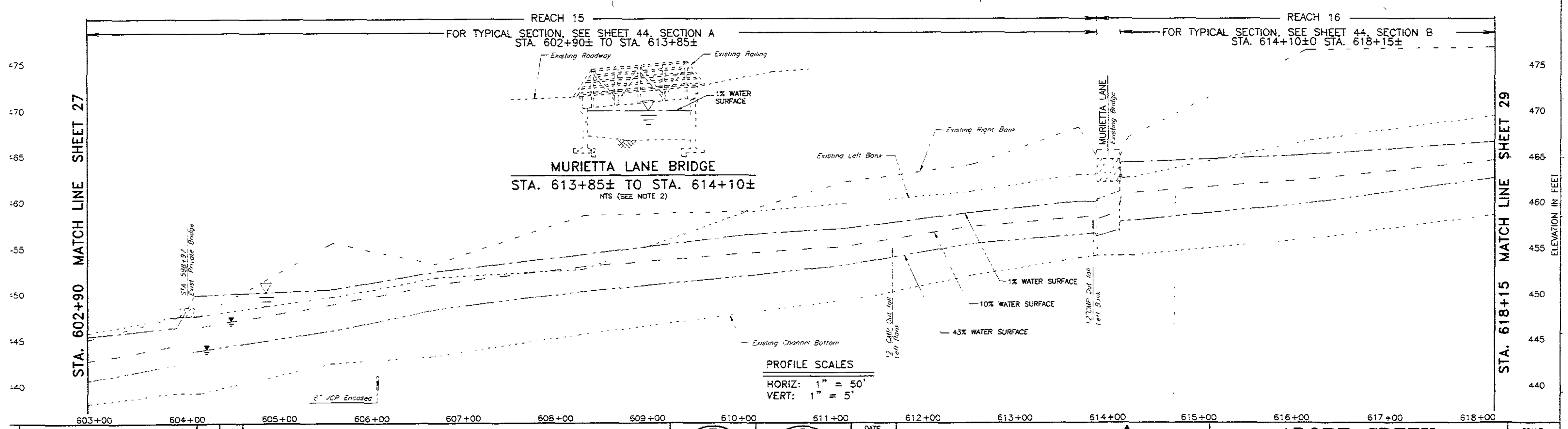
SCALE
AS SHOWN

SHEET
27
30 OF 48

WGS\P\1010_101\D-SIZE\ACPP_027.dwg



PLAN
SCALE: 1" = 50'



PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. 1% flowrate 1800 cfs, 10% flowrate 900 cfs, 43% flowrate 330 cfs.
2. Reference orientation looking upstream.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/03

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

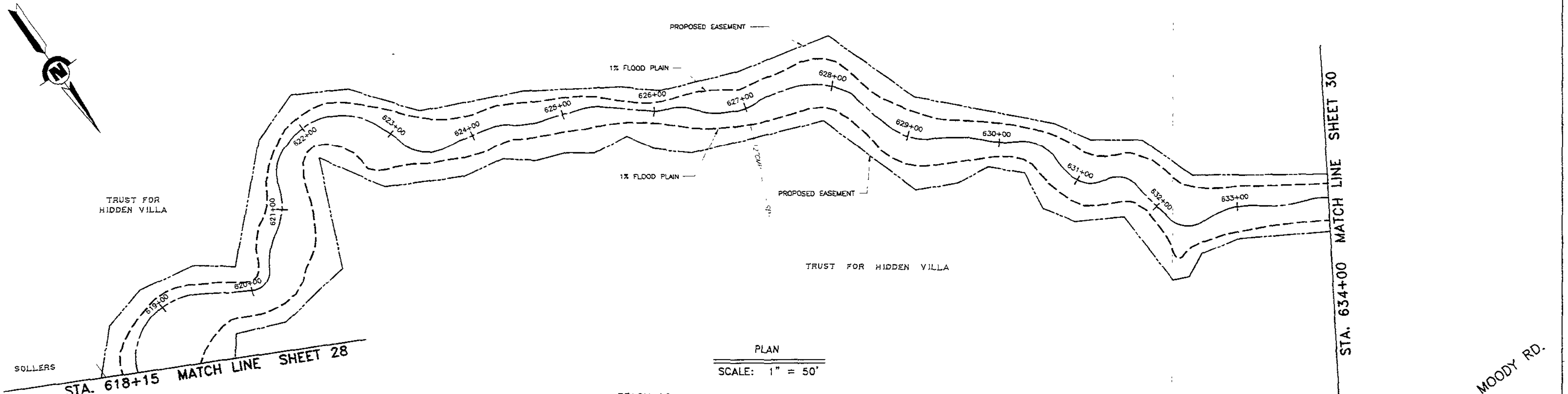
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43 84

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

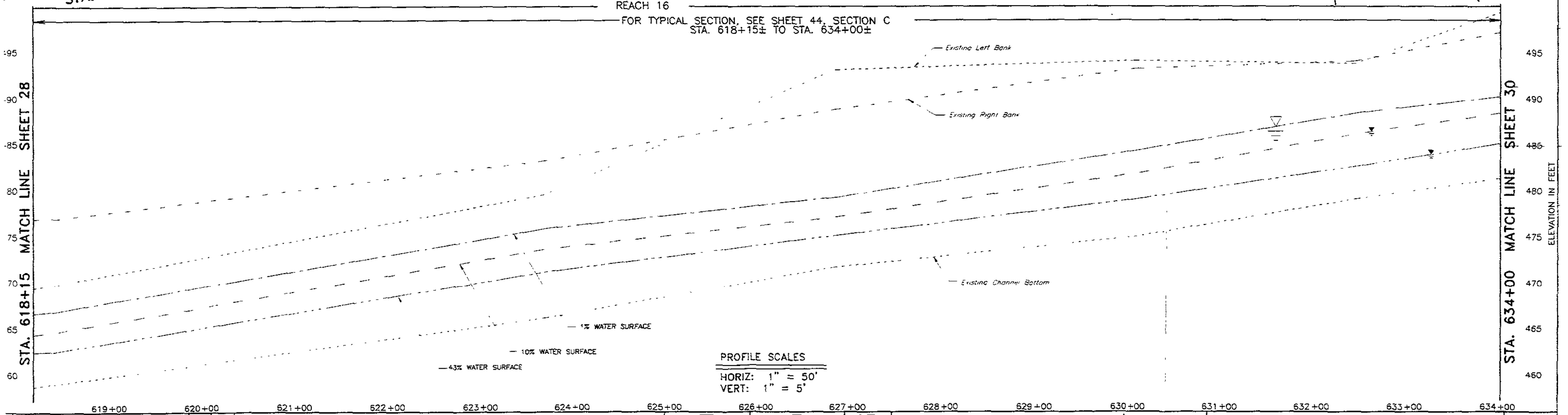
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET 28
31 of 48

WGS\P\1010_101\D-SIZE\ACPP_028.dwg



PLAN
SCALE: 1" = 50'



PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 1800 cfs. 10% flowrate 900 cfs. 43% flowrate 330 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

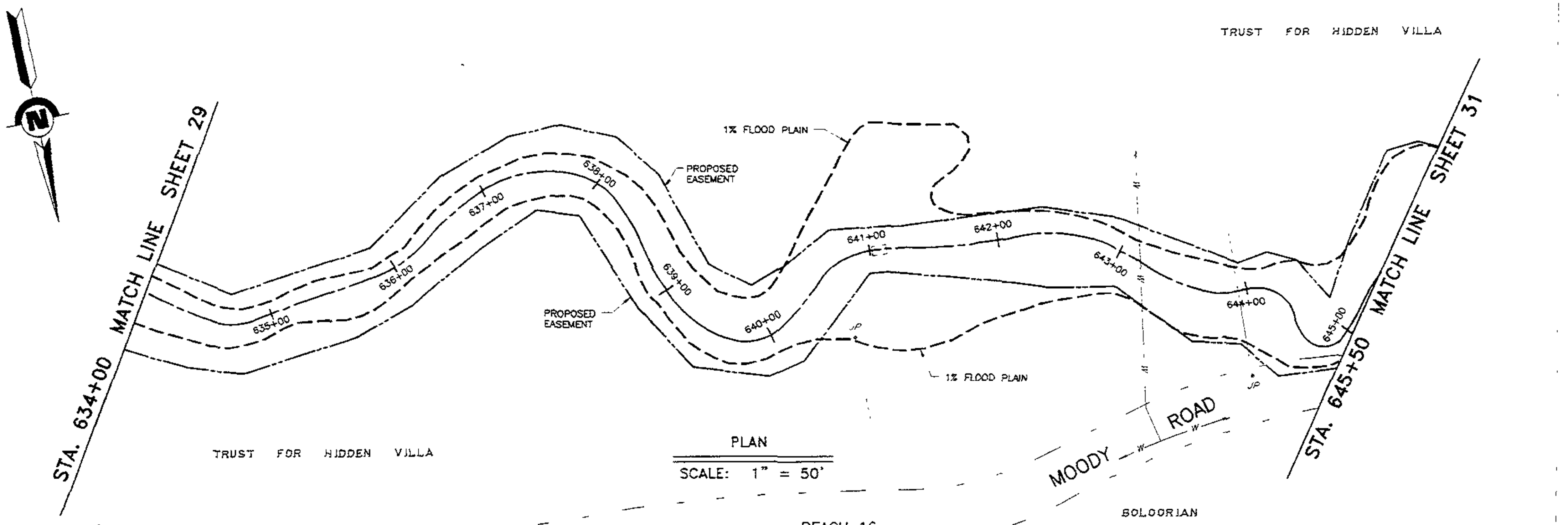
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

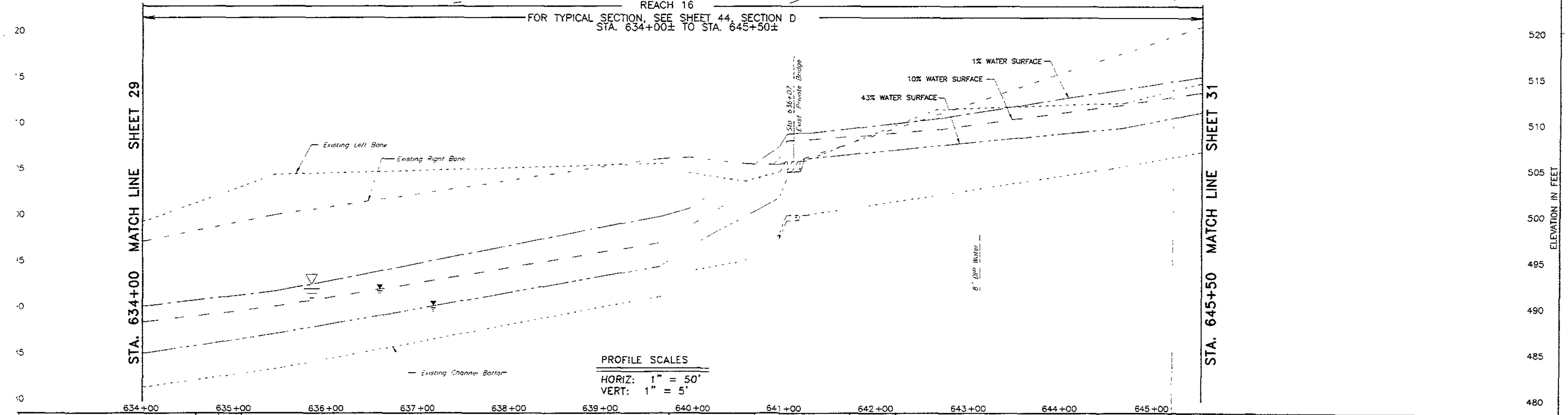
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET 29
32 of 48

\GS\P\1010_101\D-SIZE\ACPP_029.dwg



PLAN
SCALE: 1" = 50'



PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'

DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN			1. 1% flowrate 1800 cfs, 10% flowrate 900 cfs, 43% flowrate 330 cfs

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

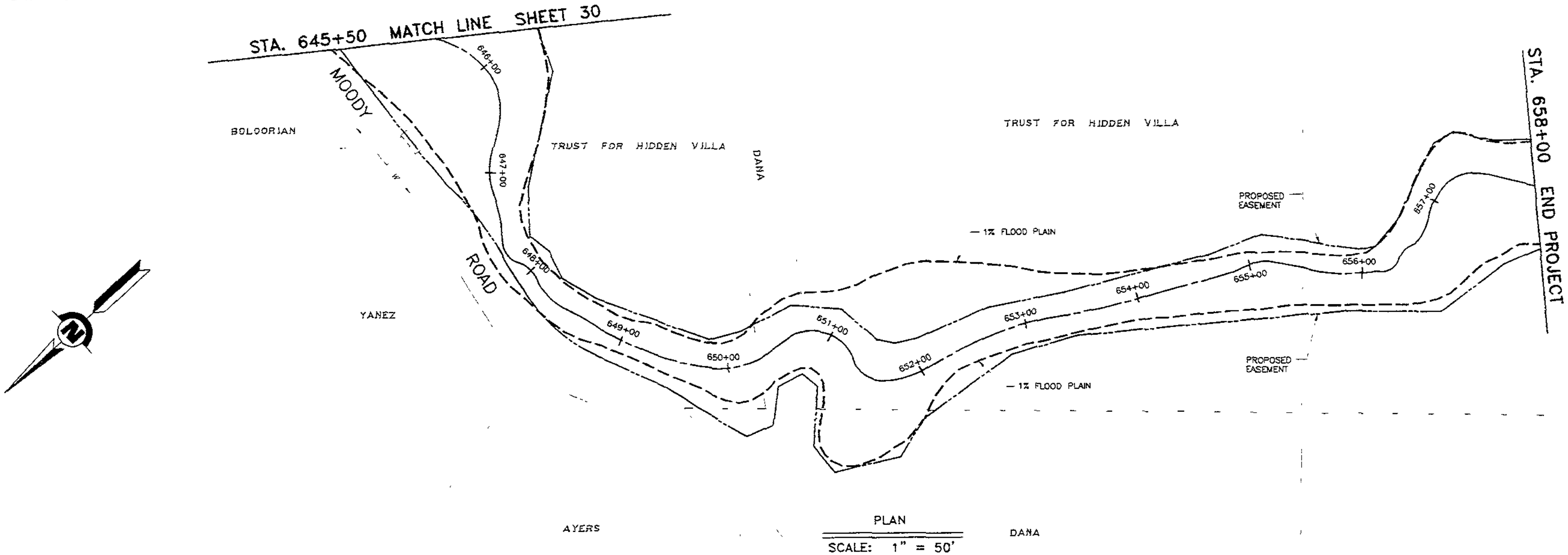
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

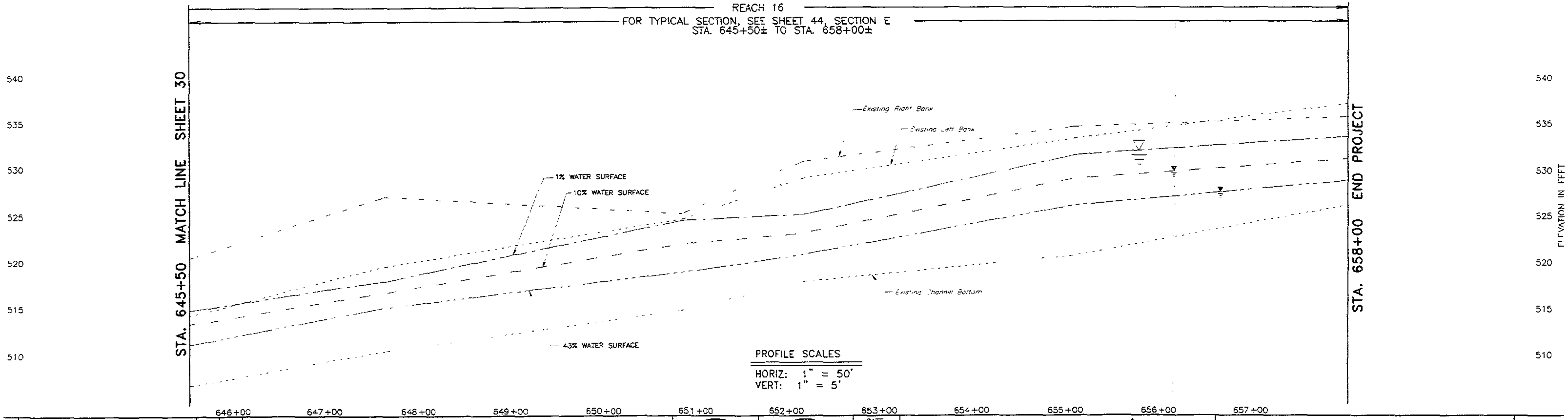
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET 30
33 OF 48

S\P\1010_101\D-SIZE\ACPP_030.dwg



PLAN
SCALE: 1" = 50'



PROFILE SCALES
HORIZ: 1" = 50'
VERT: 1" = 5'

V	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. 1% flowrate 1800 cfs. 10% flowrate 900 cfs. 43% flowrate 330 cfs.

SCOTT M. WILSON No. 43184 EXP. 3/31/00 CIVIL

RANDALL R. TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

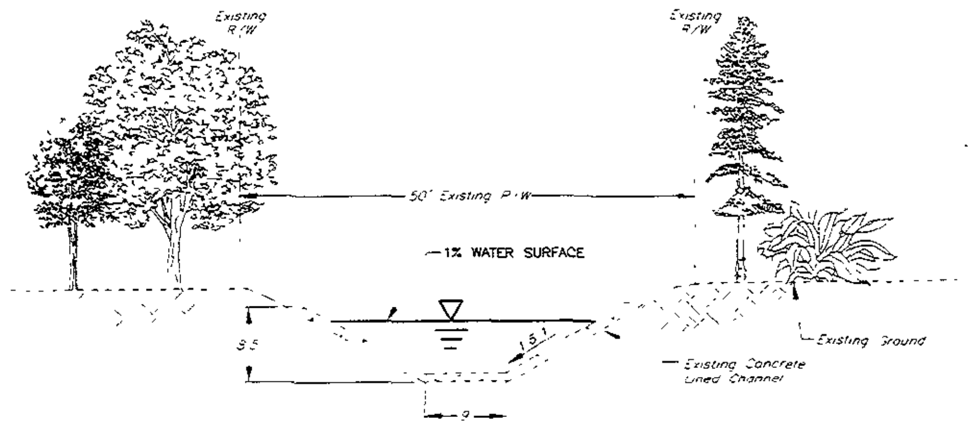
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

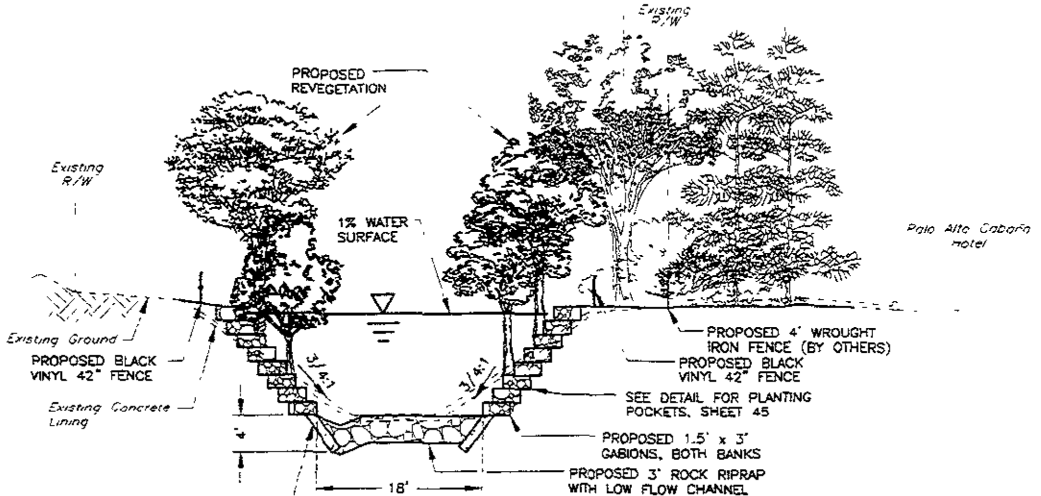
ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
PLAN AND PROFILE

SCALE AS SHOWN
SHEET 31
34 of 48

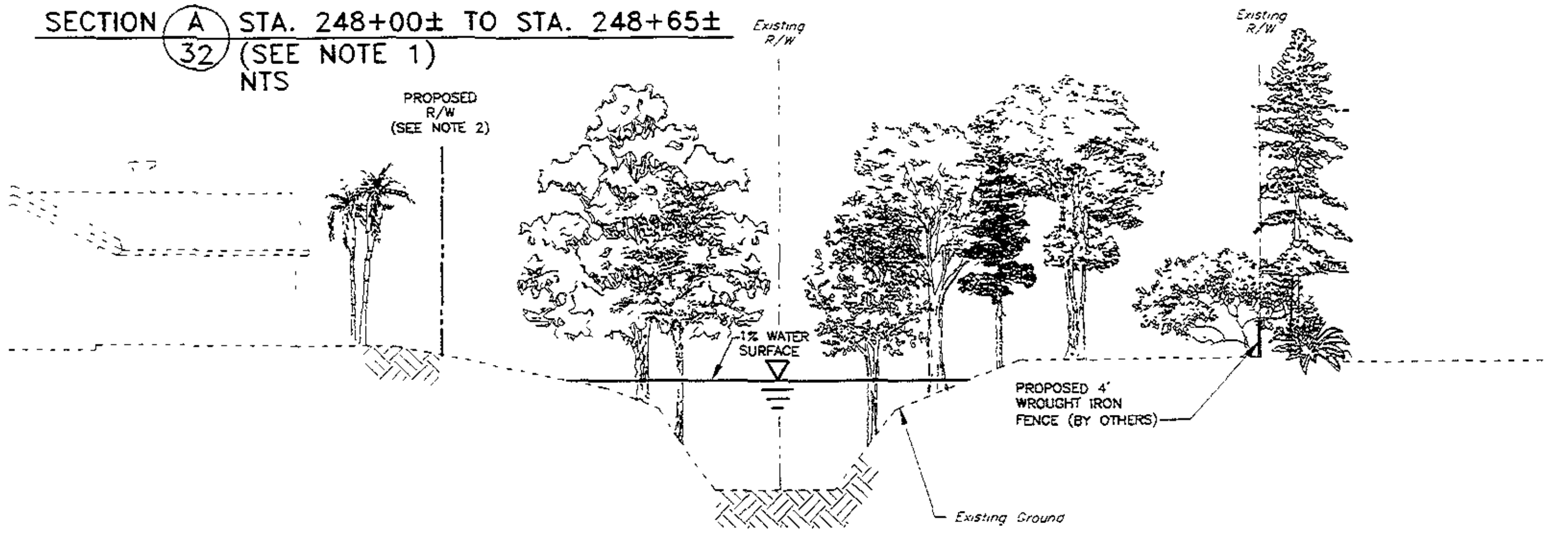
\WGS\P\1010_101\D-SIZE\ACPP_031 dwg



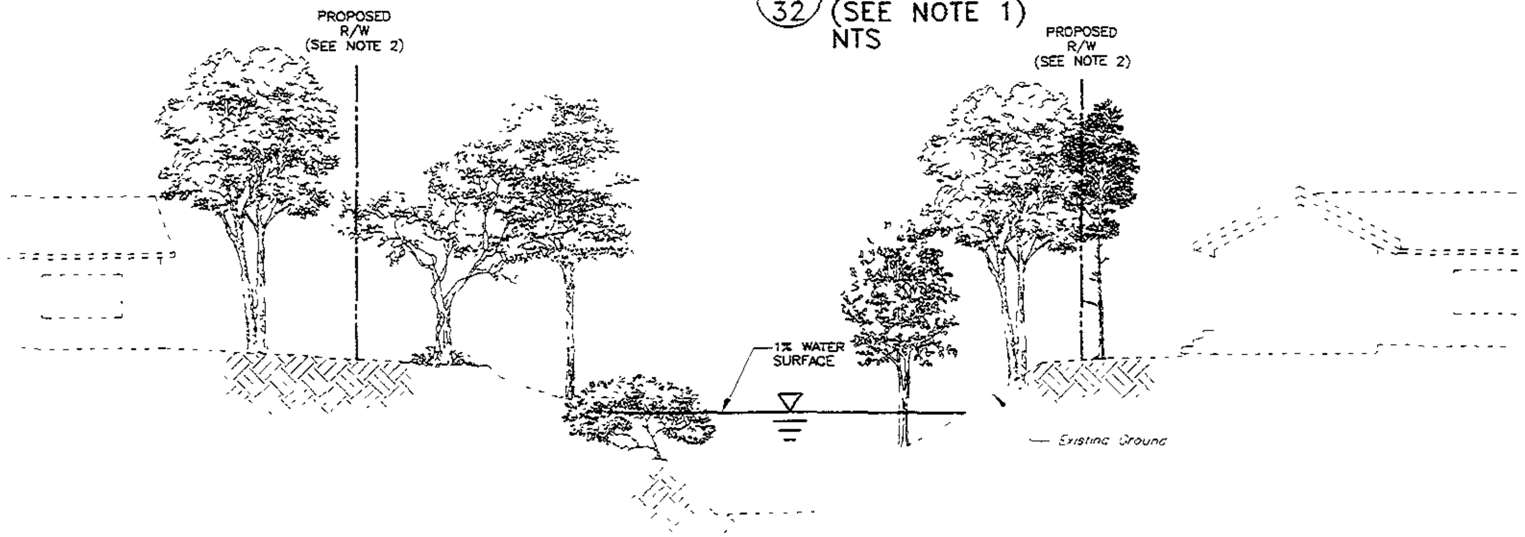
SECTION (A/32) STA. 248+00± TO STA. 248+65±
(SEE NOTE 1)
NTS


Existing R/W
PROPOSED REVEGETATION
Existing R/W
1% WATER SURFACE
Palo Alto Cabaña Hotel
Existing Ground
PROPOSED BLACK VINYL 42" FENCE
Existing Concrete Lining
3/4:1
3/4:1
PROPOSED 4' WROUGHT IRON FENCE (BY OTHERS)
PROPOSED BLACK VINYL 42" FENCE
SEE DETAIL FOR PLANTING POCKETS, SHEET 45
PROPOSED 1.5' x 3' GABIONS, BOTH BANKS
PROPOSED 3' ROCK RIPRAP WITH LOW FLOW CHANNEL
18'
PROPOSED CONCRETE CUTOFF WALL

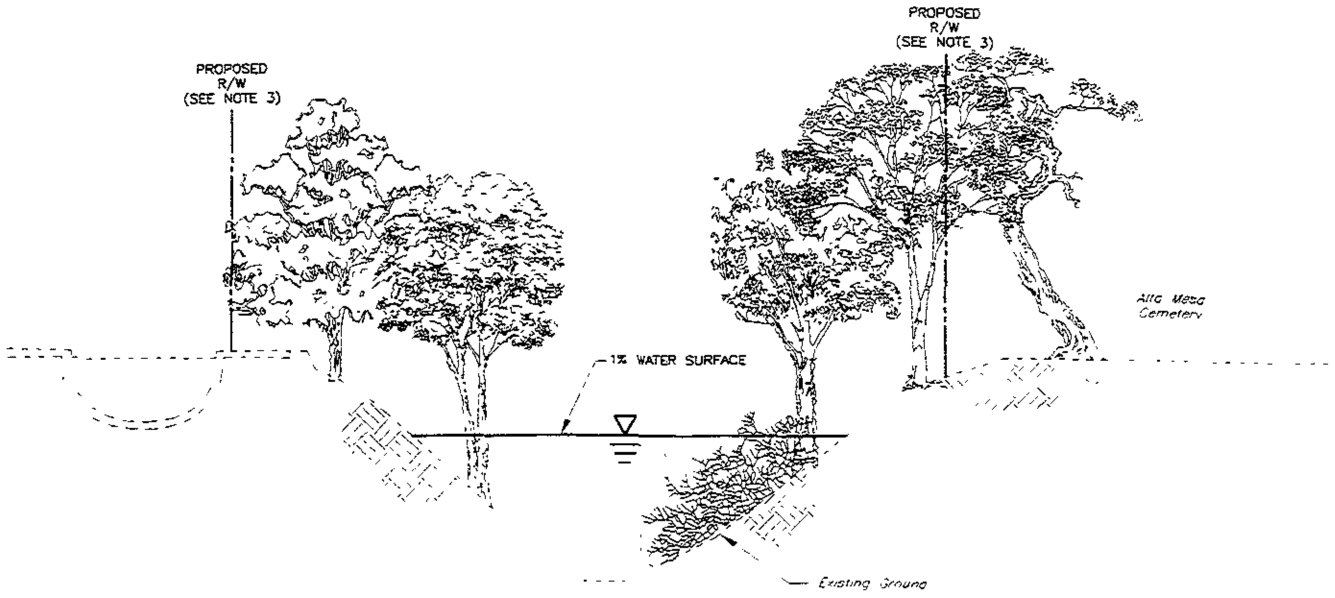
SECTION (B/32) STA. 250+90± TO STA. 252+85±
(SEE NOTE 1)
NTS


PROPOSED R/W (SEE NOTE 2)
Existing R/W
Existing R/W
1% WATER SURFACE
PROPOSED 4' WROUGHT IRON FENCE (BY OTHERS)
Existing Ground
PROPOSED FUTURE RESIDENTIAL DEVELOPMENT

SECTION (C/32) STA. 252+85± TO STA. 263+60±
(SEE NOTE 1)
NTS



SECTION (D/32) STA. 263+60± TO STA. 279+20±
(SEE NOTE 1)
NTS



SECTION (E/32) STA. 279+20± TO STA. 289+35±
(SEE NOTE 1)
NTS

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank
5. 1% flowrate 2900 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE	2/22/99
DESIGN	SB
DRAWN	CM/SL/JA
CHECKED	SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

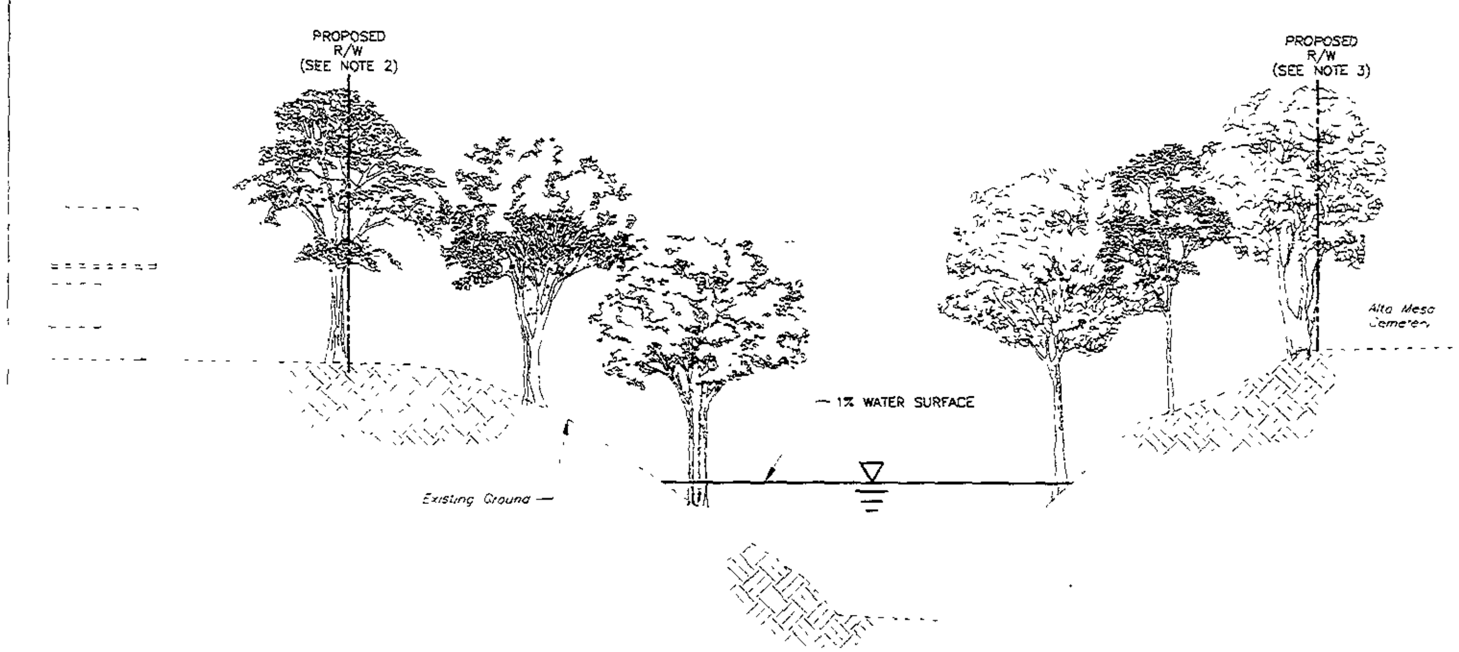
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
STA. 248+00± TO STA. 289+35±
TYPICAL SECTIONS

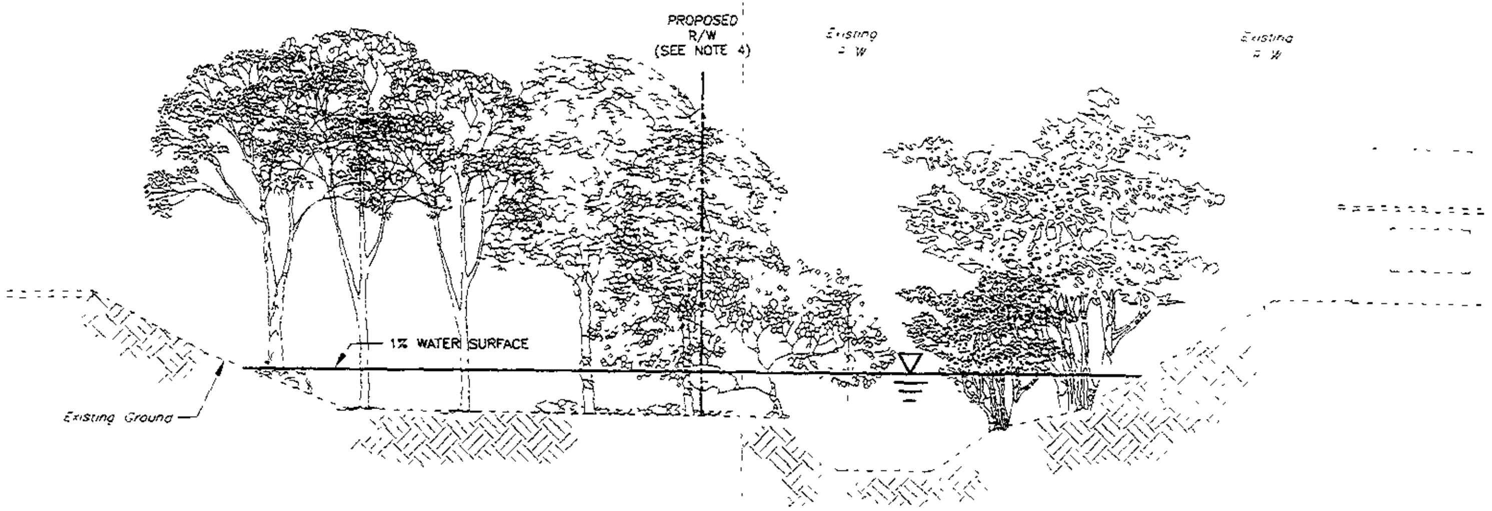
SCALE
AS SHOWN

SHEET
32
35 OF 48

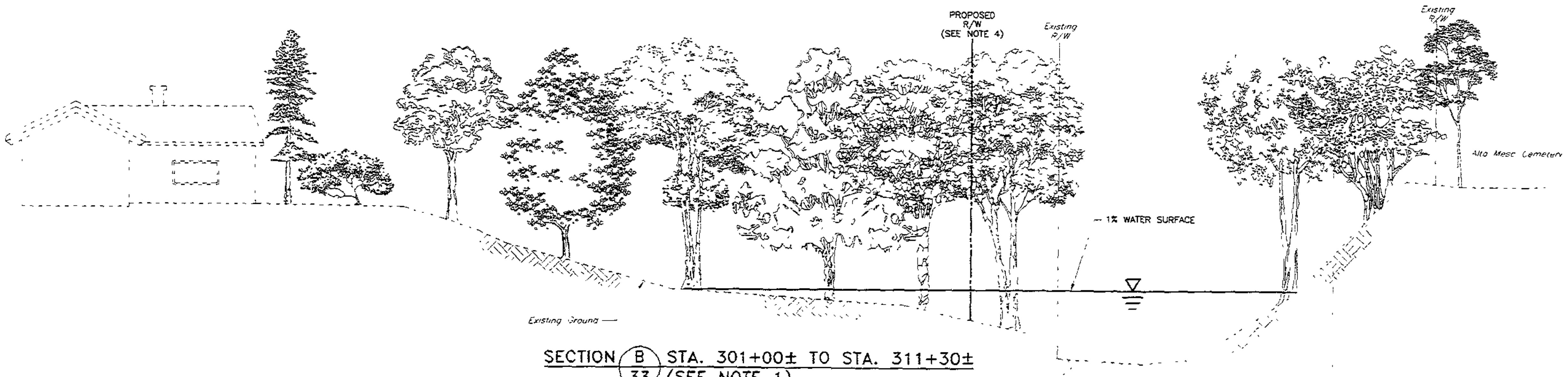
DWGS\P\1010_101\D-SIZE\ACPP_032



SECTION (A/33) STA. 289+35± TO STA. 301+00±
(SEE NOTE 1)
NTS



SECTION (C/33) STA. 311+30± TO STA. 327+00±
(SEE NOTE 1)
NTS



SECTION (B/33) STA. 301+00± TO STA. 311+30±
(SEE NOTE 1)
NTS

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Reference orientation looking upstream
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3 Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank
5 1% flowrate 2900 cfs

SCOTT M. WILSON
No. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN SB
DRAWN CM/SL/JA
CHECKED SW

Santa Clara Valley Water District

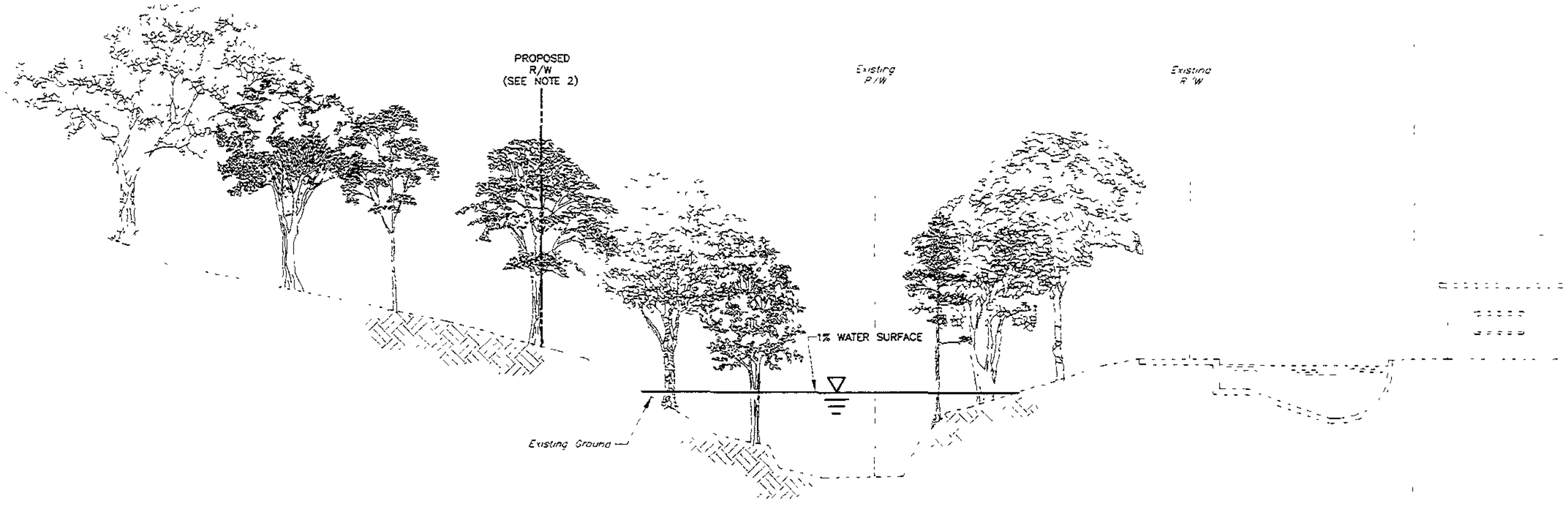
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO 25093

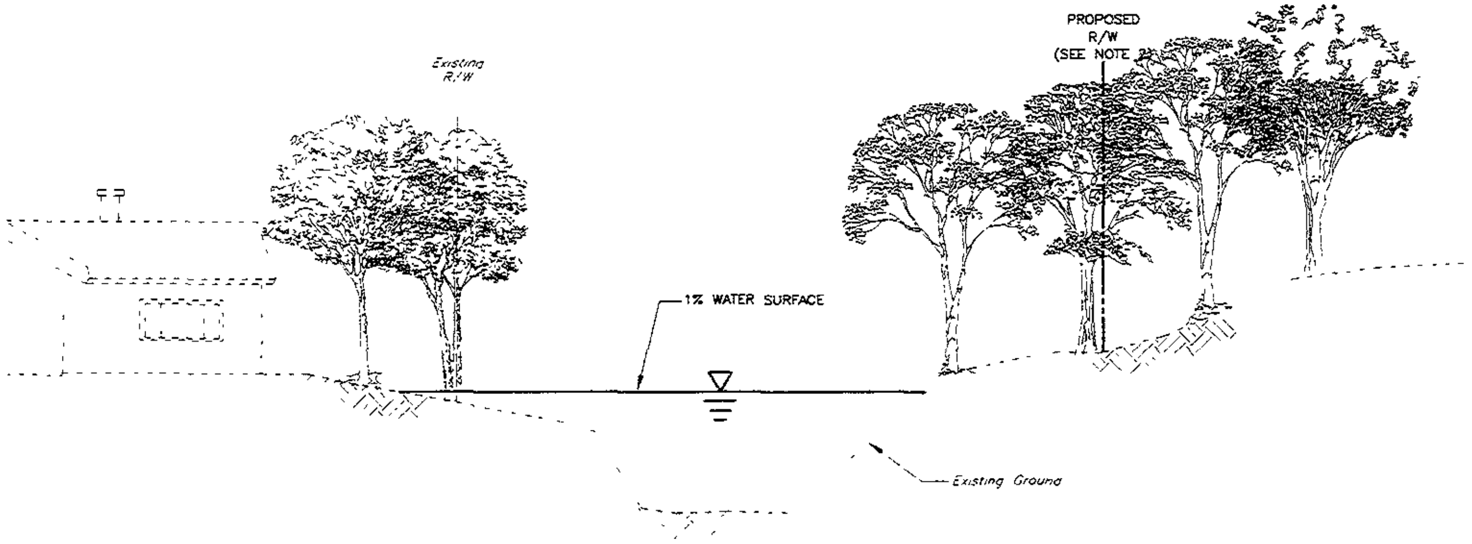
ADOBE CREEK
STA. 289+35± TO STA. 327+00±
TYPICAL SECTIONS

SCALE AS SHOWN
SHEET 33
36 OF 48

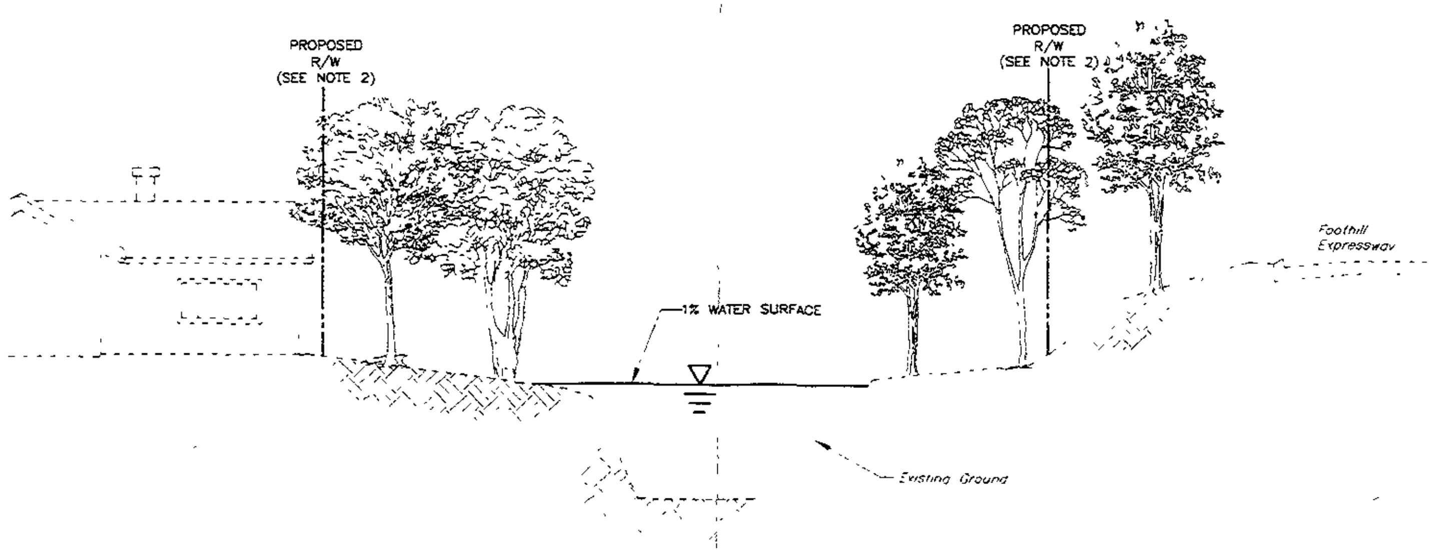
DWGS\P\1010_101\D-SIZE\ACPP_033



SECTION (A/34) STA. 327+00± TO STA. 340+05±
(SEE NOTE 1)
NTS



SECTION (B/34) STA. 340+05± TO STA. 349+85±
(SEE NOTE 1)
NTS



SECTION (C/34) STA. 349+85± TO STA. 359+15±
(SEE NOTE 1)
NTS

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank
5. 1% flowrate 2900 cfs

SCOTT M. WILSON NO. 43184 EXP. 3/31/00 CIVIL

RANDALL R. TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE 2/22/99
DESIGN SB
DRAWN CM/SL/JA
CHECKED SW

Santa Clara Valley Water District

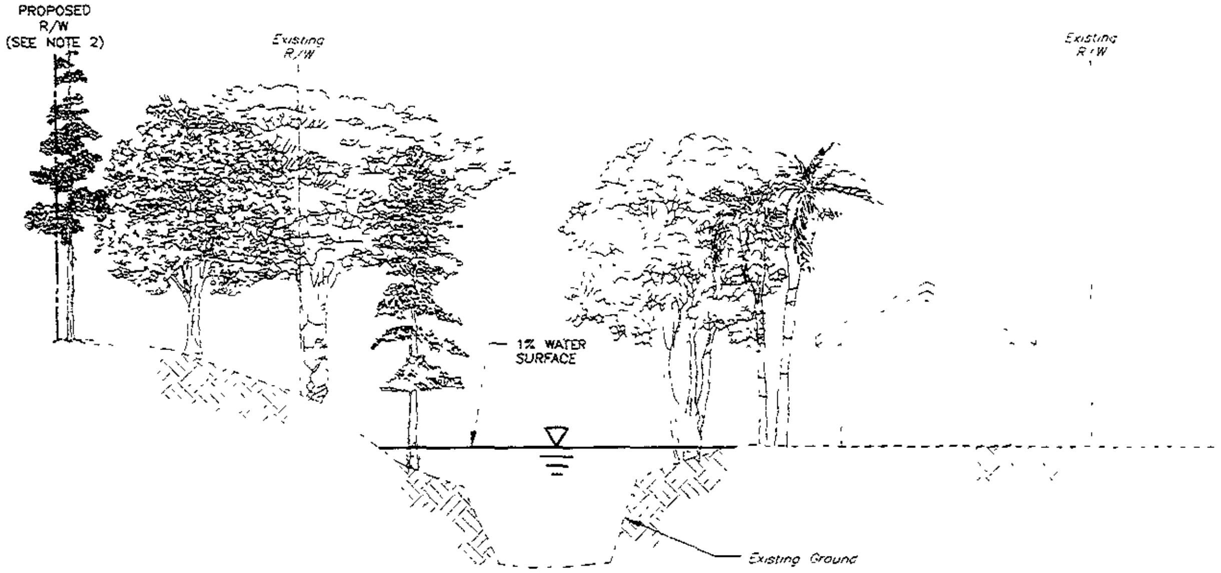
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

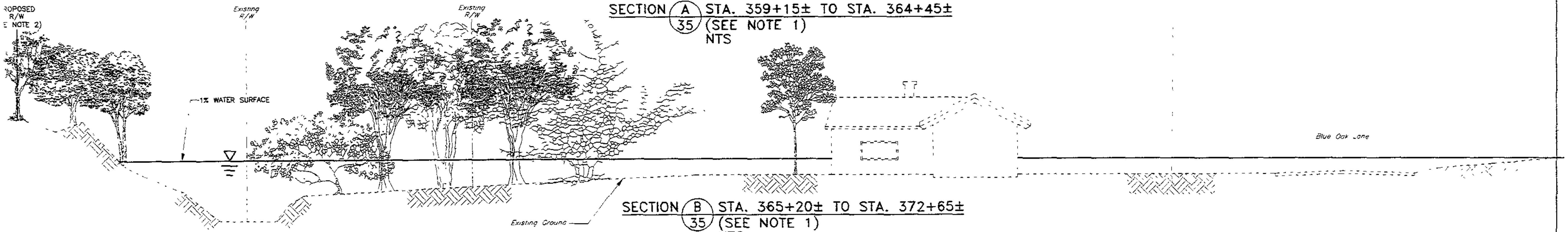
ADOBE CREEK
STA. 327+00± TO STA. 359+15±
TYPICAL SECTIONS

SCALE AS SHOWN
SHEET 34
37 OF 48

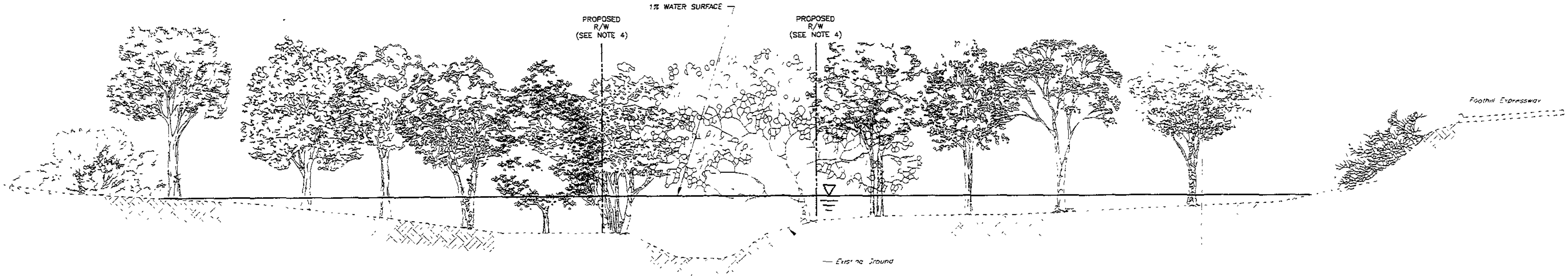
DWGS\P\1010_101\D-SIZE\ACPP_034



SECTION (A/35) STA. 359+15± TO STA. 364+45±
(SEE NOTE 1)
NTS



SECTION (B/35) STA. 365+20± TO STA. 372+65±
(SEE NOTE 1)
NTS



SECTION (C/35) STA. 372+65± TO STA. 375+60±
(SEE NOTE 1)
NTS

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1 Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4 Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5 1% flowrate 2900 cfs.

SCOTT M. WILSON NO. 43184 EXP. 3/31/00 CIVIL

RANDALL R. TALLEY No. 25093 EXP. 12/31/01 CIVIL

DATE	2/22/99
DESIGN	SB
DRAWN	CM/SL/JA
CHECKED	SW

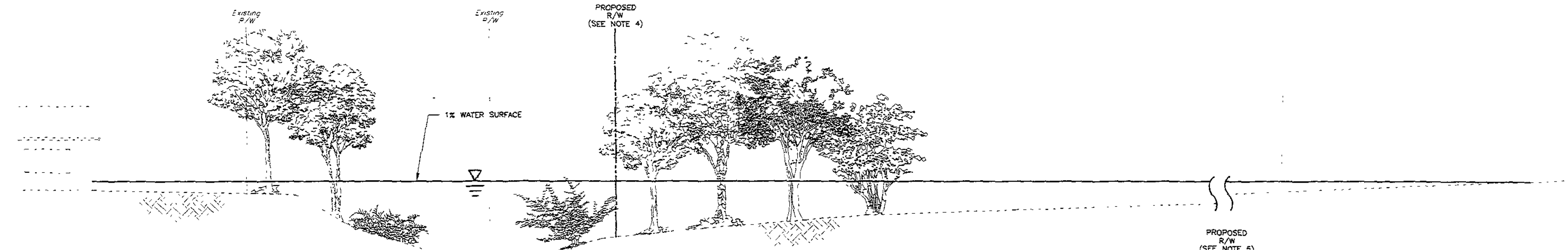
Santa Clara Valley Water District

ENGINEERING CERTIFICATION	ENGINEERING APPROVAL
PROJECT ENGINEER R.C.E. NO 43184	SUPERVISING ENGINEER R.C.E. NO 25093

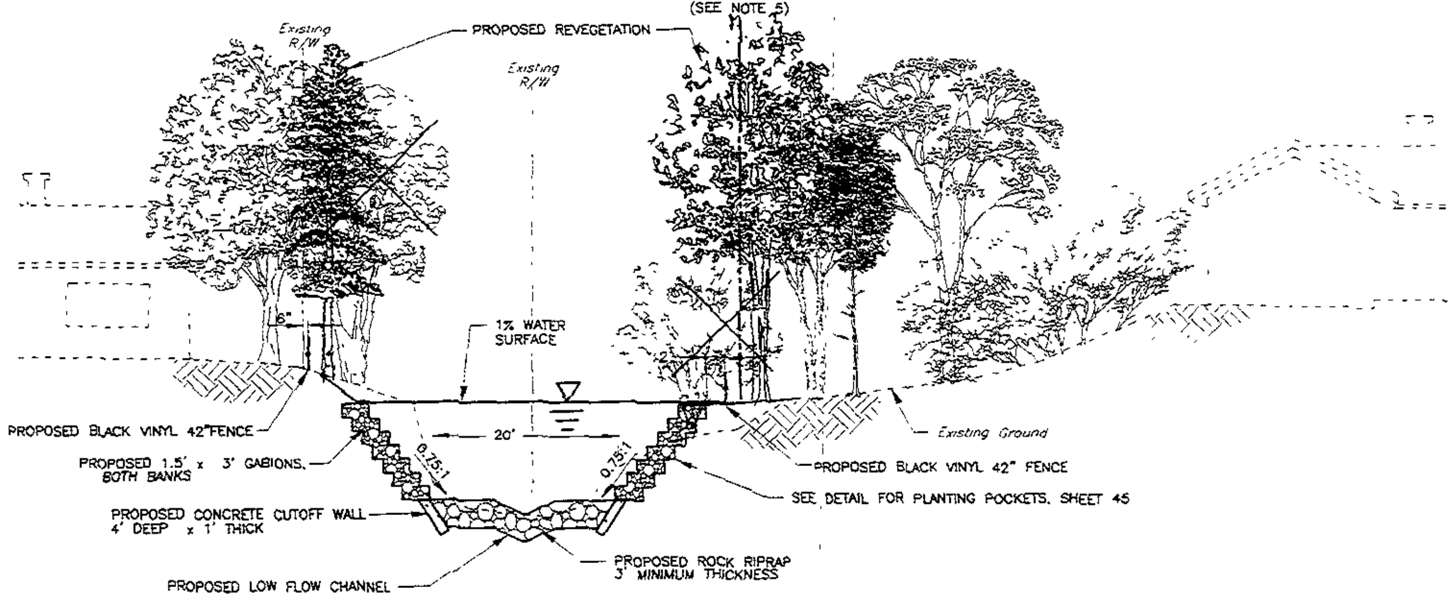
ADOBE CREEK
STA. 359+15± TO STA. 375+60±
TYPICAL SECTIONS

SCALE AS SHOWN
SHEET 35
38 OF 48

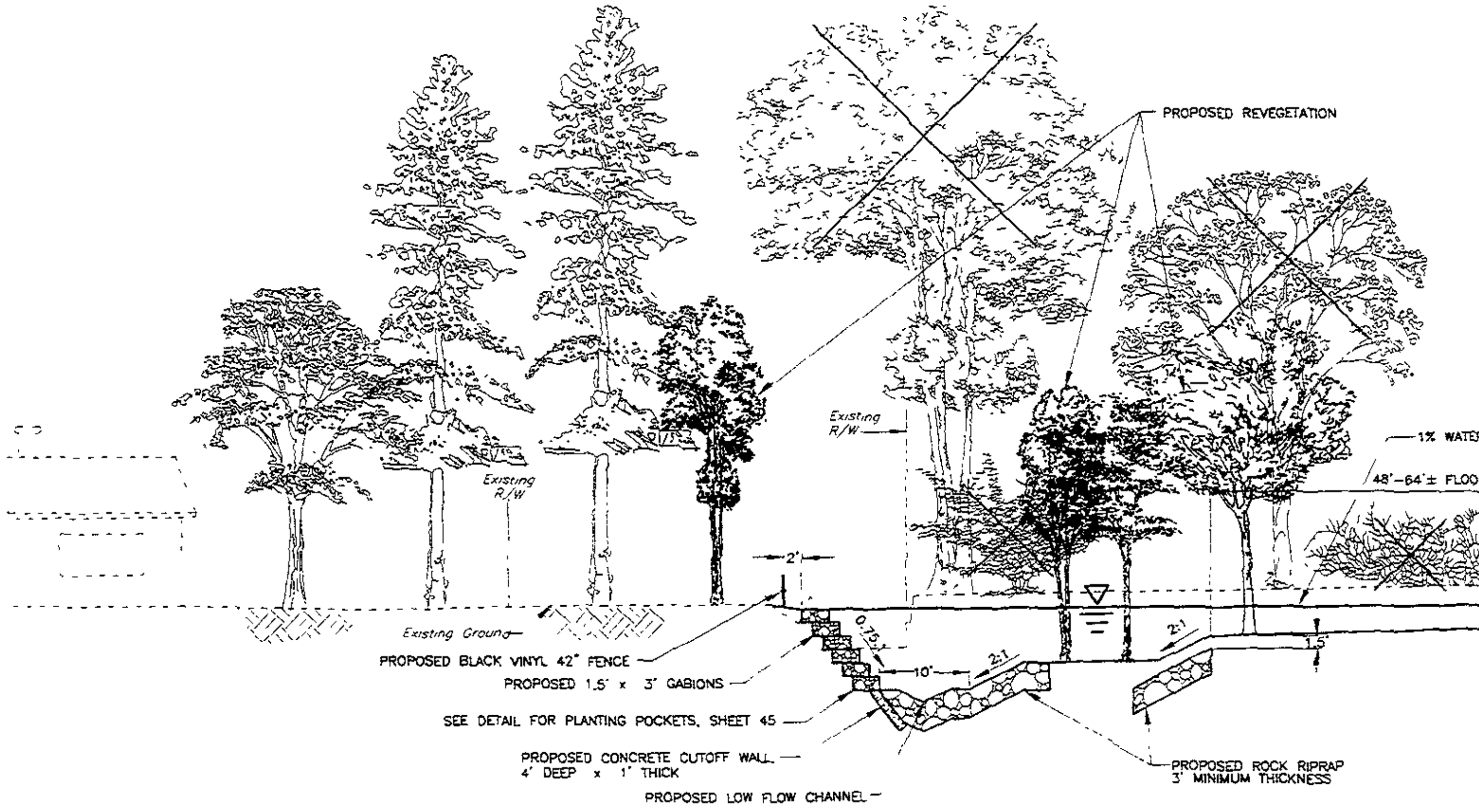
GS\P\1010_101\D-SIZE\ACPP_035



SECTION (A/36) STA. 378+40± TO STA. 389+75±
(SEE NOTE 1)
NTS


PROPOSED R/W (SEE NOTE 5)
PROPOSED REVEGETATION
Existing R/W
Existing R/W
1% WATER SURFACE
20'
0.75:1
0.75:1
Existing Ground
PROPOSED BLACK VINYL 42" FENCE
PROPOSED 1.5' x 3' GABIONS, BOTH BANKS
PROPOSED CONCRETE CUTOFF WALL 4' DEEP x 1' THICK
PROPOSED LOW FLOW CHANNEL
PROPOSED BLACK VINYL 42" FENCE
SEE DETAIL FOR PLANTING POCKETS, SHEET 45
PROPOSED ROCK RIPRAP 3' MINIMUM THICKNESS

SECTION (B/36) STA. 389+75± TO STA. 391+50±
(SEE NOTE 1)
NTS


PROPOSED REVEGETATION
PROPOSED R/W (SEE NOTE 5)
Existing R/W
Existing R/W
1% WATER SURFACE
48'-64'± FLOODBENCH
2'
0.75:1
10'
2:1
2:1
2:1
1.5'
Existing Ground
PROPOSED BLACK VINYL 42" FENCE
PROPOSED 1.5' x 3' GABIONS
SEE DETAIL FOR PLANTING POCKETS, SHEET 45
PROPOSED CONCRETE CUTOFF WALL 4' DEEP x 1' THICK
PROPOSED LOW FLOW CHANNEL
PROPOSED ROCK RIPRAP 3' MINIMUM THICKNESS

SECTION (C/36) STA. 392+00± TO STA. 398+00±
(SEE NOTE 1)
NTS

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. Proposed R/W based on channel modification width requirements
6. 1% flowrate 2700 cfs

SCOTT M. WILSON NO. 43184 EXP. 3/31/03

RANDALL R. TALLEY No. 25093 EXP 12/31/01

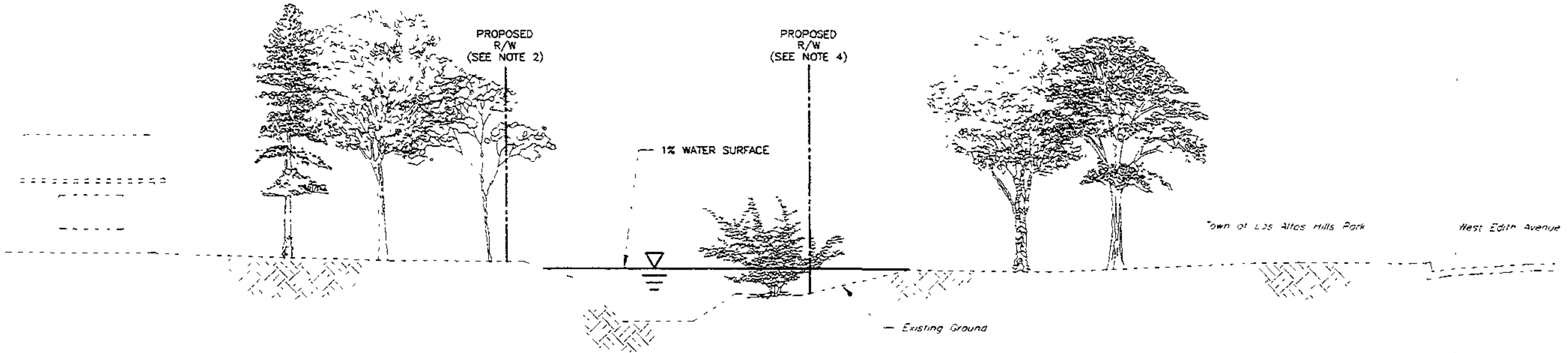
DATE	2/22/99
DESIGN	SB
DRAWN	CM/SL/JA
CHECKED	SW

Santa Clara Valley Water District

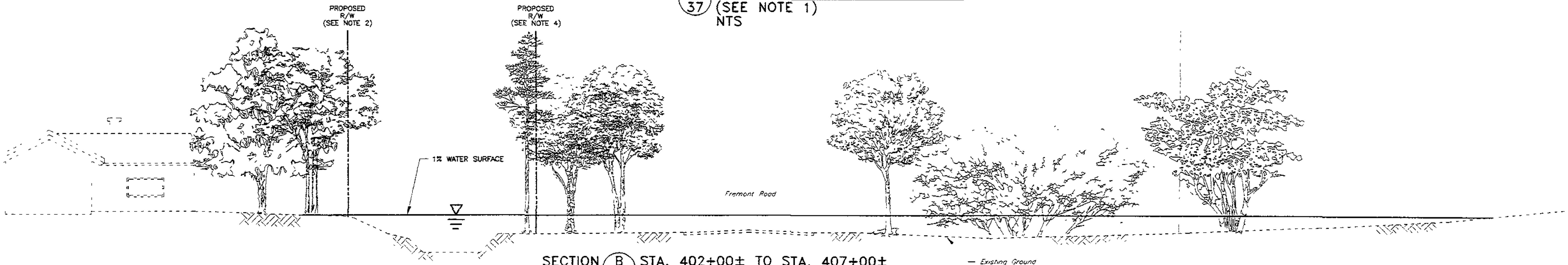
ENGINEERING CERTIFICATION	ENGINEERING APPROVAL
PROJECT ENGINEER R.C.E. NO. 43184	SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
STA. 378+40± TO STA. 398+00±
TYPICAL SECTIONS

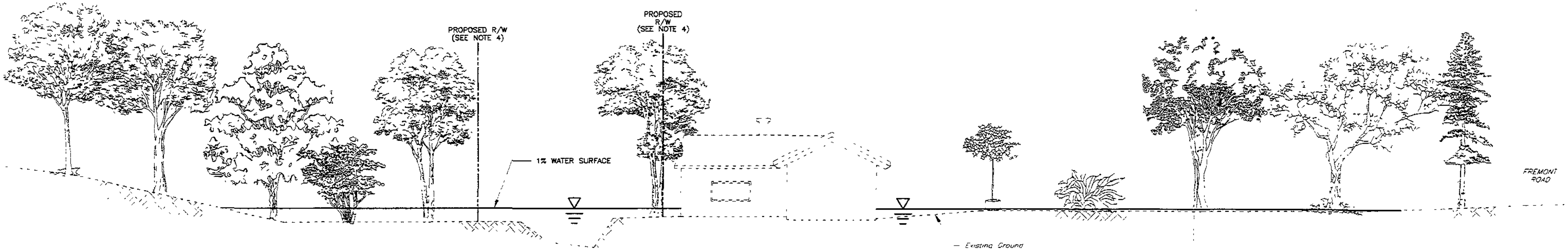
SCALE AS SHOWN
SHEET 36
39 OF 48


PROPOSED R/W (SEE NOTE 2)
PROPOSED R/W (SEE NOTE 4)
1% WATER SURFACE
Town of Los Altos Hills Park
West Edith Avenue
Existing Ground

SECTION (A/37) STA. 399+30± TO STA. 402+00±
(SEE NOTE 1)
NTS



SECTION (B/37) STA. 402+00± TO STA. 407+00±
(SEE NOTE 1)
NTS



SECTION (C/37) STA. 407+00± TO STA. 417+55±
(SEE NOTE 1)
NTS

EV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. 1% flowrate 2700 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN SB
DRAWN CM/SL/JA
CHECKED SW

Santa Clara Valley Water District

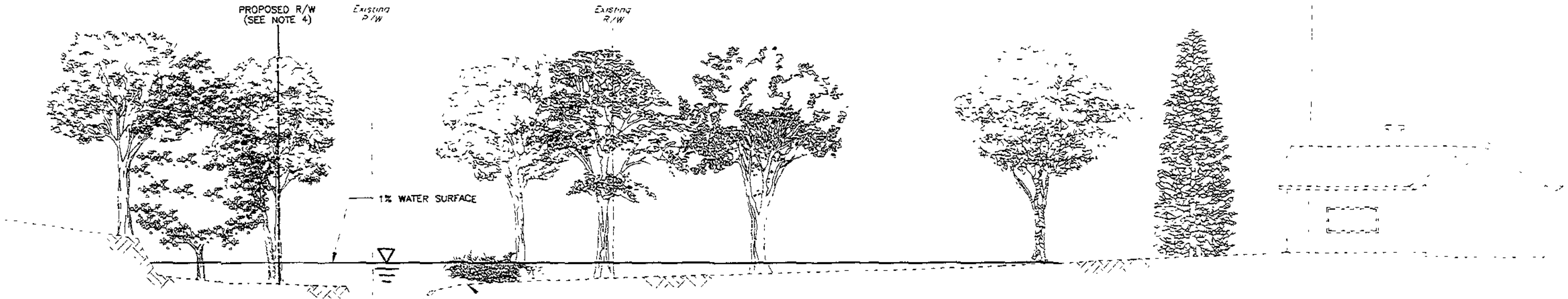
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

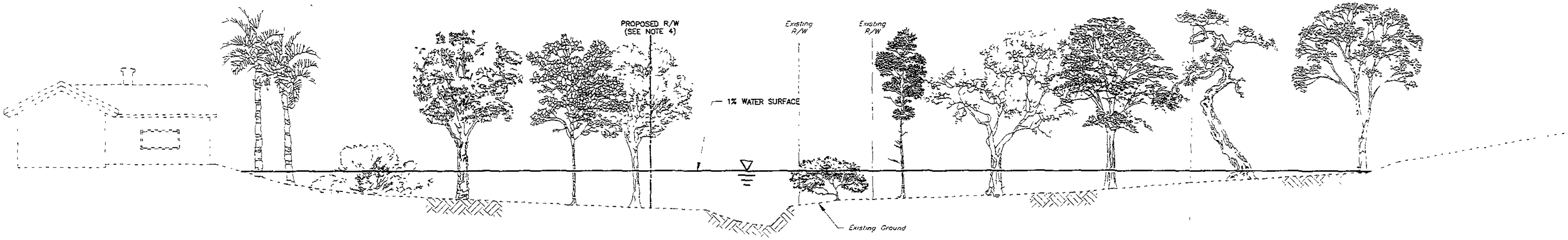
ADOBE CREEK
STA. 399+30± TO STA. 417+55±
TYPICAL SECTIONS

SCALE AS SHOWN
SHEET 37
40 OF 48

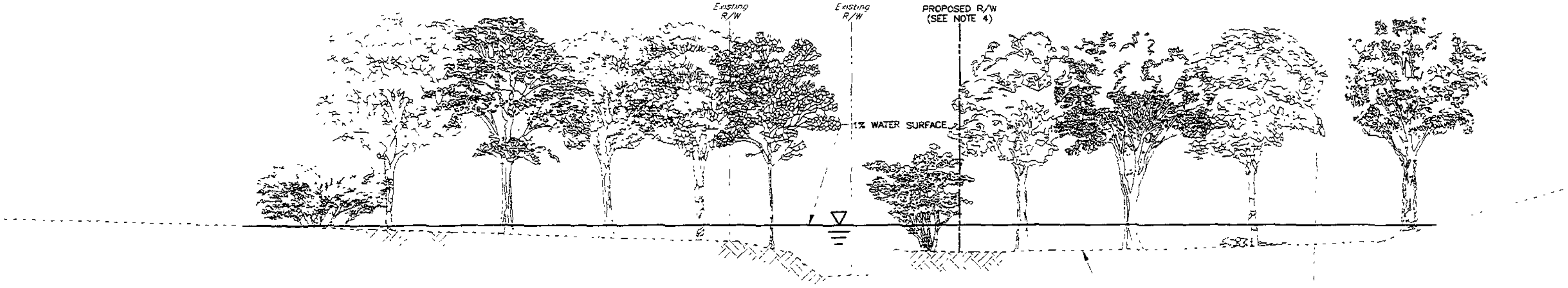
DWGS\P\1010_101\D-SIZE\ACPP_037



SECTION (A/38) STA. 417+55± TO STA. 422+00±
(SEE NOTE 1)
NTS



SECTION (B/38) STA. 422+65± TO STA. 427+00±
(SEE NOTE 1)
NTS



SECTION (C/38) STA. 427+00± TO STA. 435+90±
(SEE NOTE 1)
NTS

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. 1% flowrate 2700 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN SB
DRAWN CM/SL/JA
CHECKED SW

Santa Clara Valley Water District

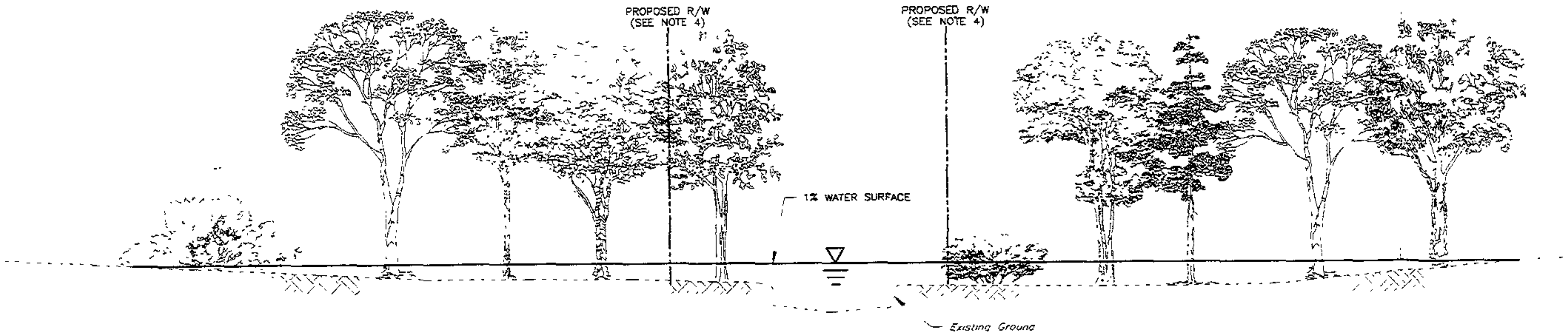
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

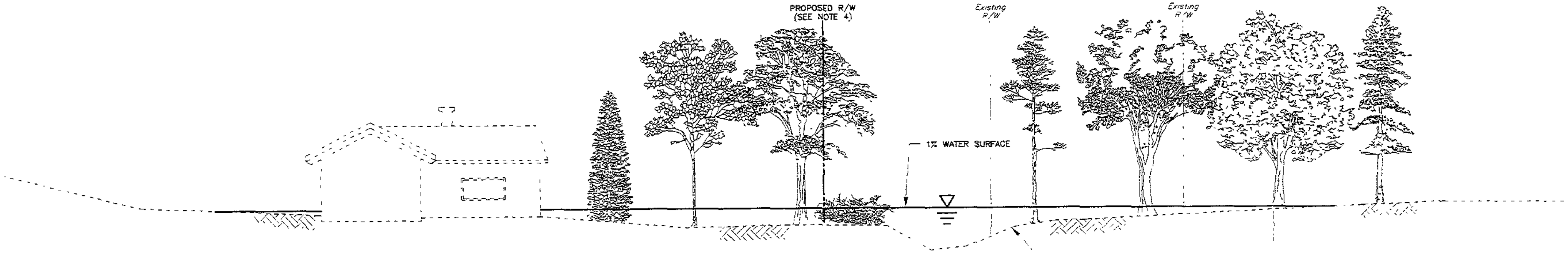
ADOBE CREEK
STA. 417+55± TO STA. 435+90±
TYPICAL SECTIONS

SCALE AS SHOWN
SHEET 38
41 OF 48

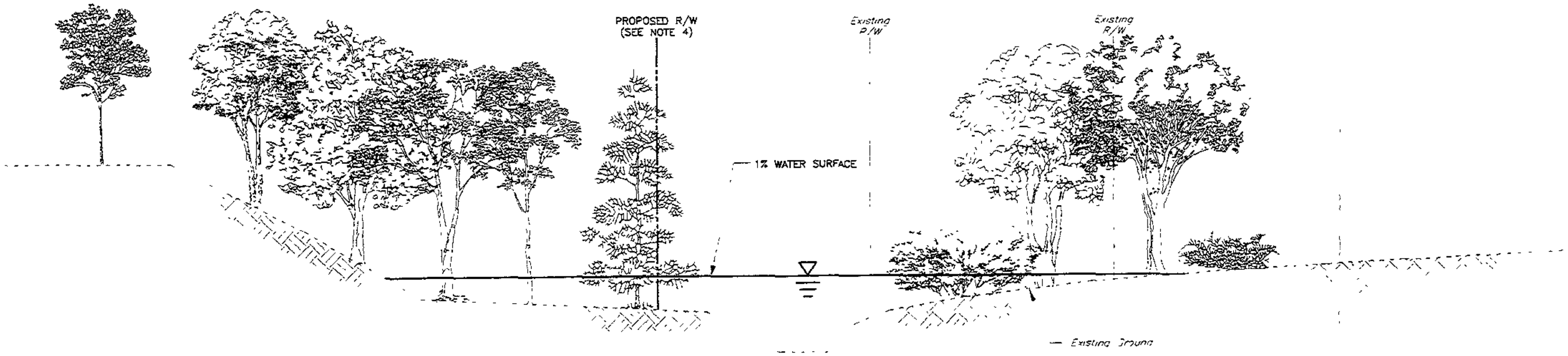
DWGS\ P\ 1010 1011 D SIZE\ ACPP 038



SECTION (A/39) STA. 435+90± TO STA. 449+20±
(SEE NOTE 1)
NTS



SECTION (B/39) STA. 449+20± TO STA. 455+60±
(SEE NOTE 1)
NTS



SECTION (C/39) STA. 458+55± TO STA. 464+90±
(SEE NOTE 1)
NTS

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. 1% flowrate 2700 cfs.

SCOTT M. WILSON NO. 43184 EXP. 3/31/00

RANDALL R. TALLEY No. 25093 EXP. 12/31/01

DATE	2/22/99
DESIGN	SB
DRAWN	CM/SL/JA
CHECKED	SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

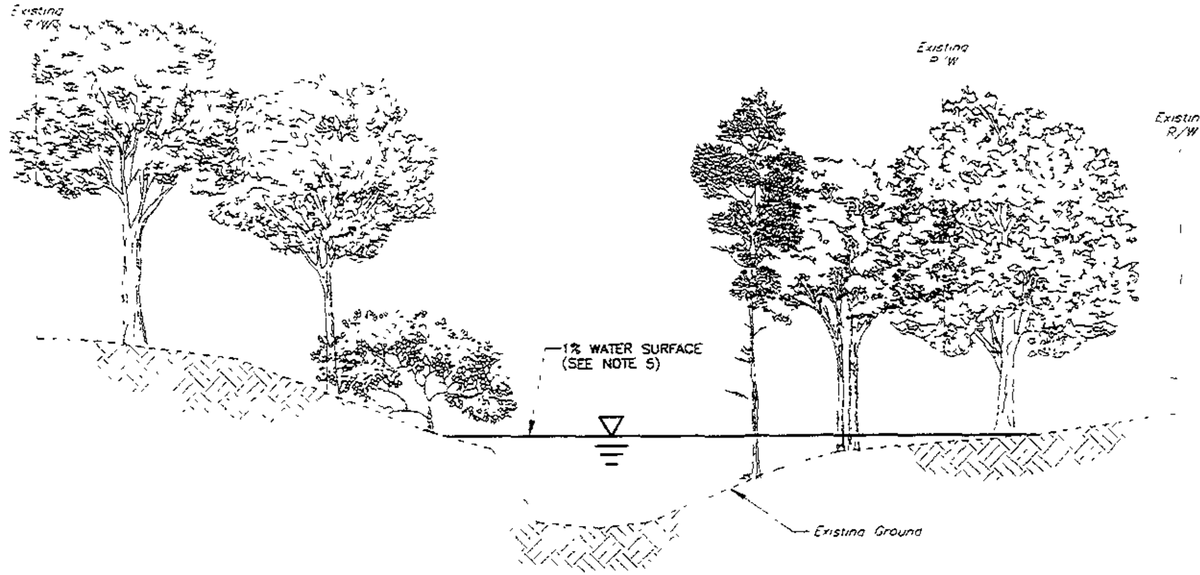
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
STA. 435+90± TO STA. 464+90±
TYPICAL SECTIONS

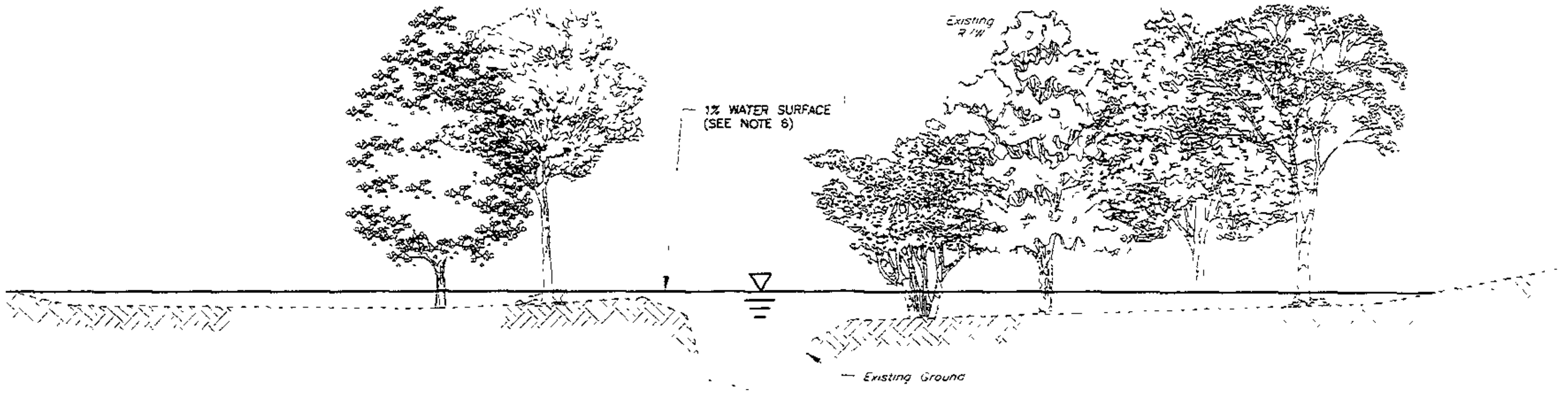
SCALE
AS SHOWN

SHEET
39
42 OF 48

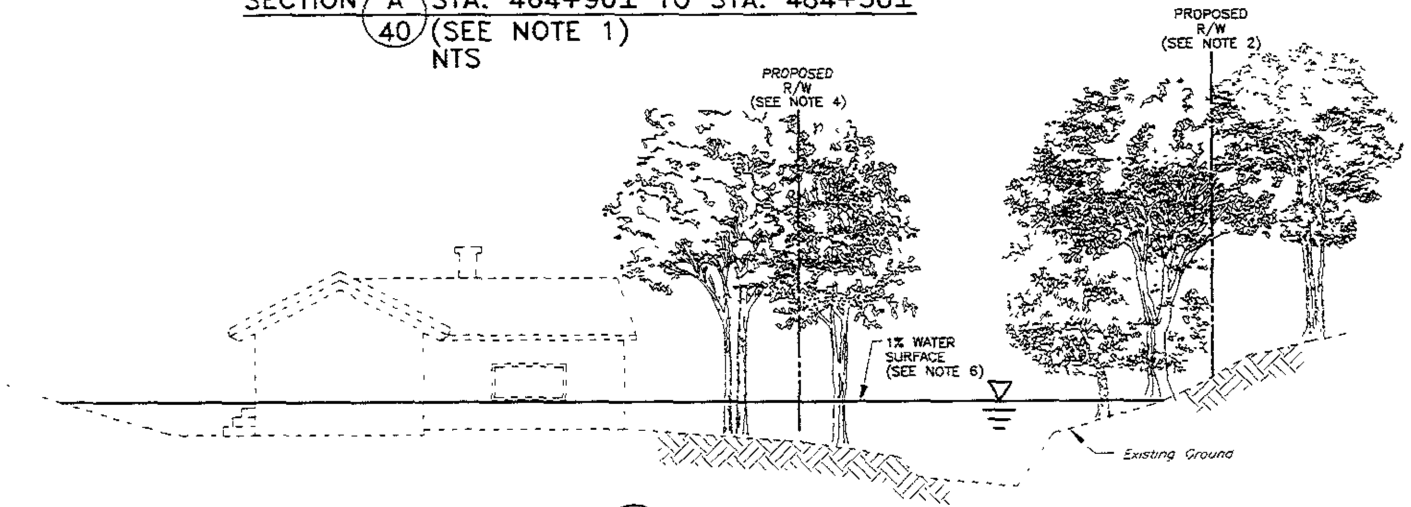
\DWGS\P\1010_101\D-SIZE\ACPP_039



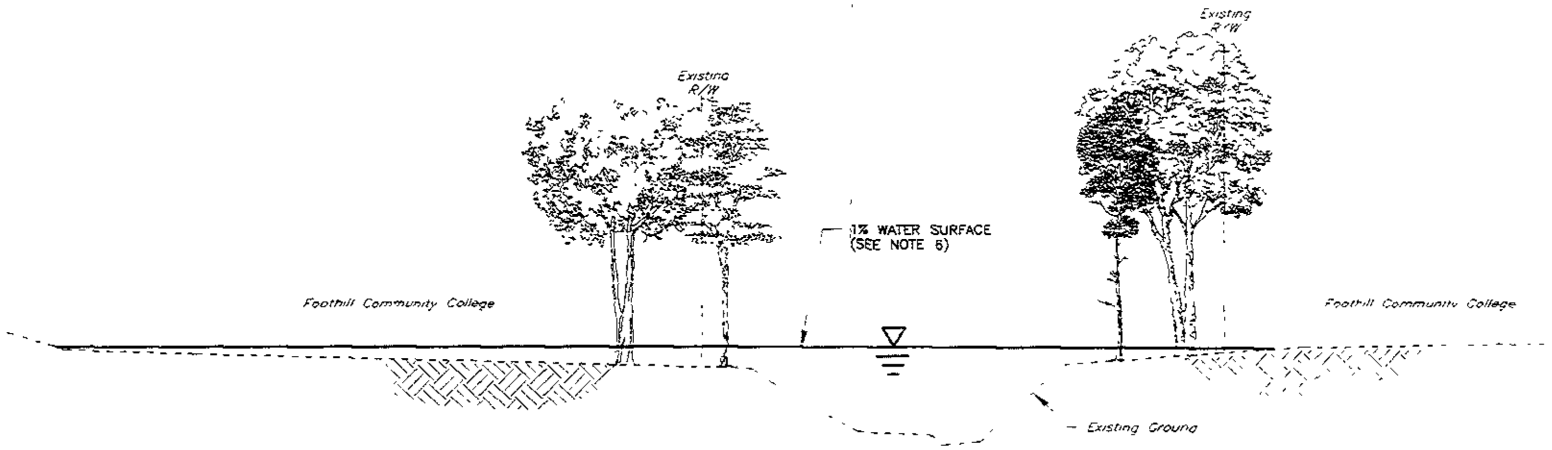
SECTION (A/40) STA. 464+90± TO STA. 484+50±
(SEE NOTE 1)
NTS



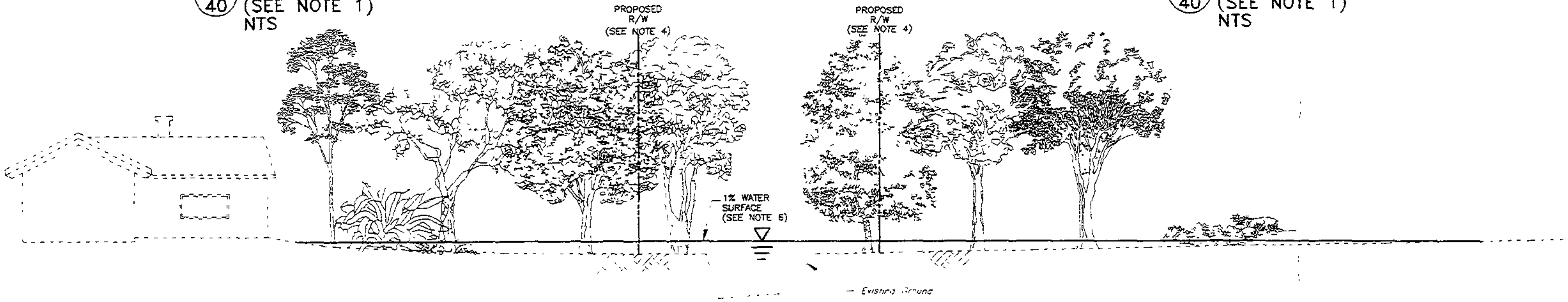
SECTION (B/40) STA. 484+50± TO STA. 490+55±
(SEE NOTE 1)
NTS


PROPOSED R/W (SEE NOTE 4)
PROPOSED R/W (SEE NOTE 2)
1% WATER SURFACE (SEE NOTE 6)
Existing Ground

SECTION (C/40) STA. 491+90± TO STA. 499+45±
(SEE NOTE 1)
NTS


Existing R/W
Existing R/W
1% WATER SURFACE (SEE NOTE 6)
Foothill Community College
Foothill Community College
Existing Ground

SECTION (E/40) STA. 509+50± TO STA. 513+30±
(SEE NOTE 1)
NTS


PROPOSED R/W (SEE NOTE 4)
PROPOSED R/W (SEE NOTE 4)
1% WATER SURFACE (SEE NOTE 6)
Existing Ground

SECTION (D/40) STA. 499+45± TO STA. 505+35±
(SEE NOTE 1)
NTS

EV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3 Proposed R/W based on restricted conditions due to existing structures
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. Downstream of station 484+50: 1% flowrate 2700 cfs.
6. Upstream of station 484+50 1% flowrate 2000 cfs

SCOTT M. WILSON NO. 43184 EXP. 3/31/00
RANDALL R. TALLEY No. 25093 EXP. 12/31/01

DATE 2/22/99
DESIGN SB
DRAWN CM/SL/JA
CHECKED SW

Santa Clara Valley Water District

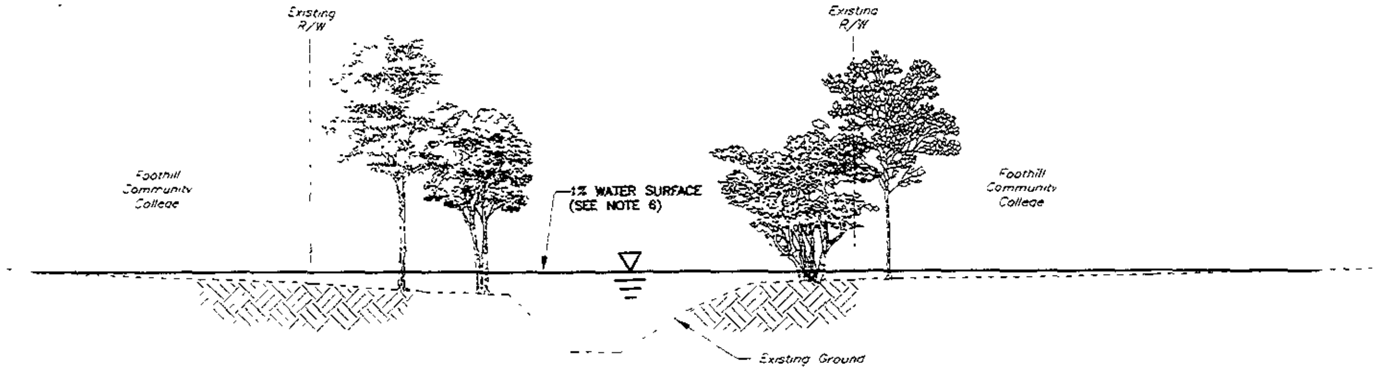
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

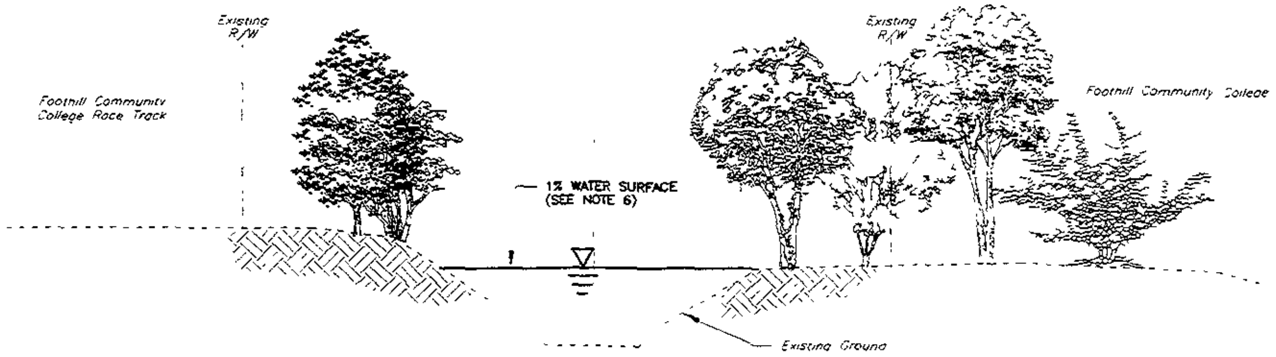
ADOBE CREEK
STA. 464+90± TO STA. 505+35±
TYPICAL SECTIONS

SCALE AS SHOWN
SHEET 40
43 OF 48

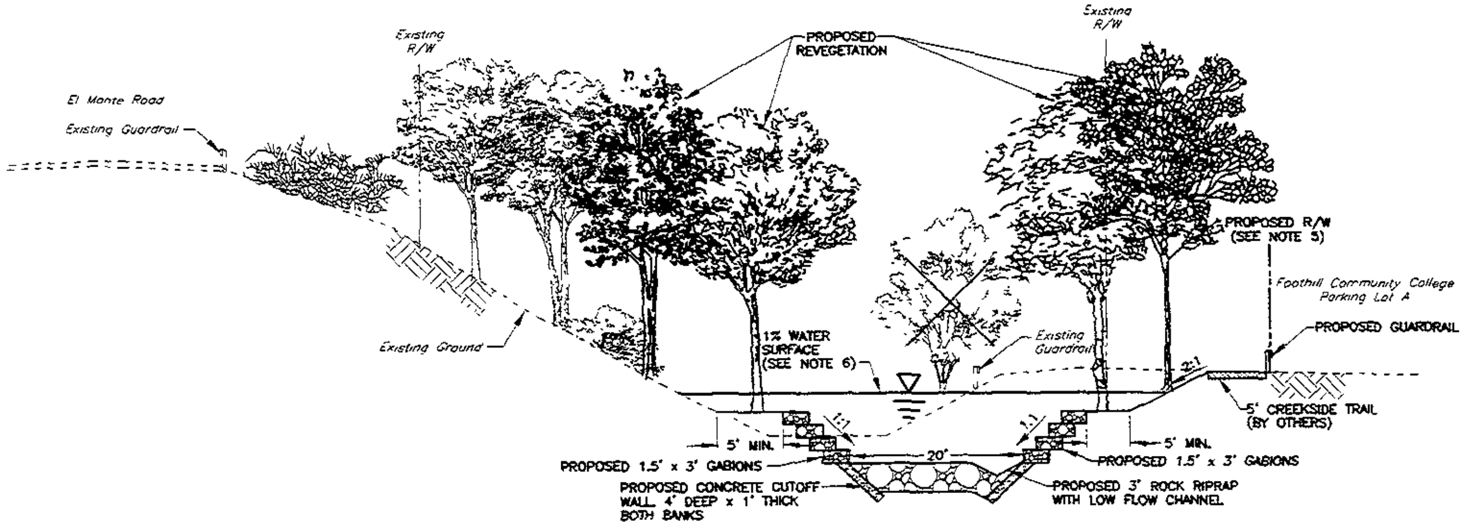
DWGS\P\1010_101\D-SIZE\ACPP_040


Existing R/W
Existing R/W
Foothill Community College
1% WATER SURFACE (SEE NOTE 6)
Foothill Community College
Existing Ground

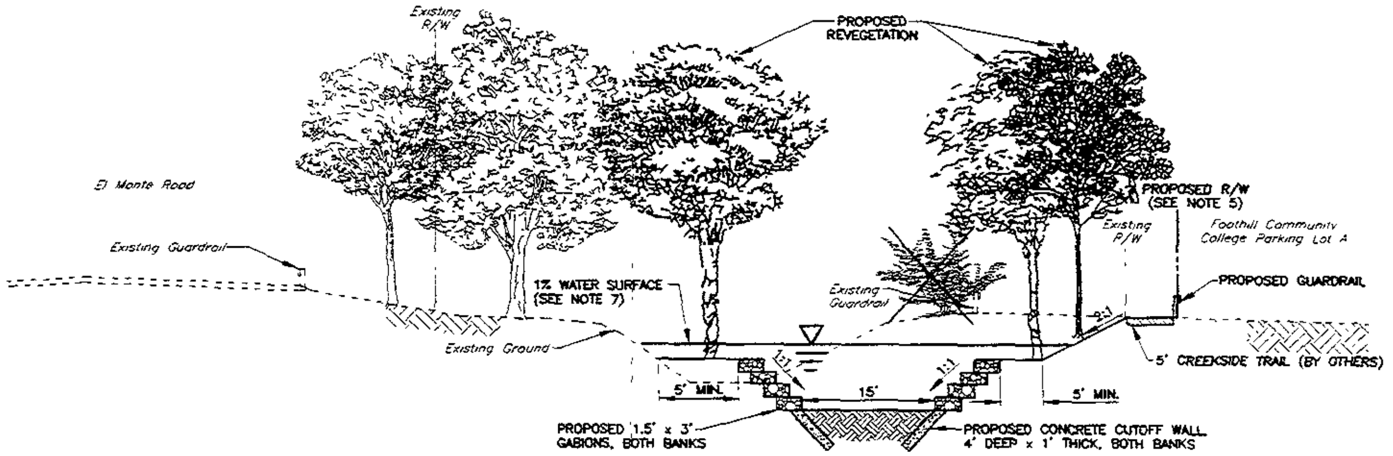
SECTION (A/41) STA. 513+30± TO STA. 516+50±
(SEE NOTE 1)
NTS


Existing R/W
Foothill Community College Race Track
Existing R/W
Foothill Community College
1% WATER SURFACE (SEE NOTE 6)
Existing Ground

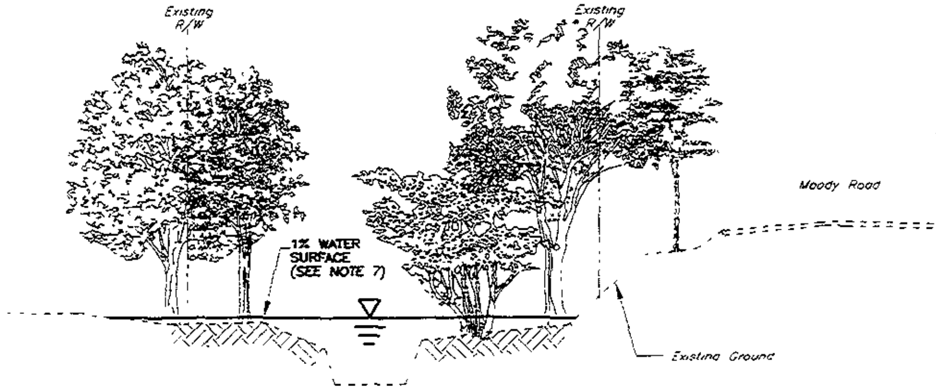
SECTION (B/41) STA. 518+55± TO STA. 525+90±
(SEE NOTE 1)
NTS


Existing R/W
PROPOSED REVEGETATION
Existing R/W
El Monte Road
Existing Guardrail
PROPOSED R/W (SEE NOTE 5)
Foothill Community College Parking Lot A
PROPOSED GUARDRAIL
Existing Ground
1% WATER SURFACE (SEE NOTE 6)
Existing Guardrail
2:1
1:1
1:1
5' CREEKSIDE TRAIL (BY OTHERS)
5' MIN.
5' MIN.
20'
PROPOSED 1.5' x 3' GABIONS
PROPOSED 1.5' x 3' GABIONS
PROPOSED CONCRETE CUTOFF WALL 4' DEEP x 1' THICK BOTH BANKS
PROPOSED 3' ROCK RIPRAP WITH LOW FLOW CHANNEL

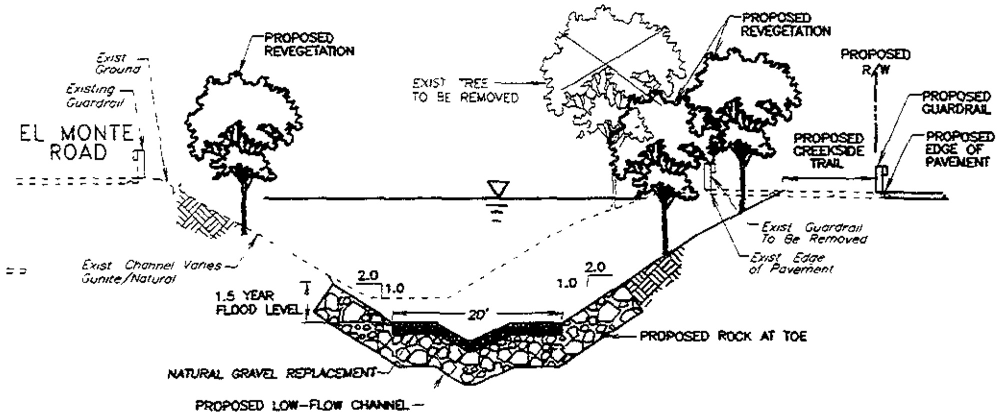
SECTION (C/41) STA. 528+45± TO STA. 537+60±
(SEE NOTE 1)
NTS


Existing R/W
PROPOSED REVEGETATION
PROPOSED R/W (SEE NOTE 5)
El Monte Road
Existing R/W
Foothill Community College Parking Lot A
Existing Guardrail
PROPOSED GUARDRAIL
1% WATER SURFACE (SEE NOTE 7)
Existing Guardrail
2:1
Existing Ground
1:1
1:1
5' CREEKSIDE TRAIL (BY OTHERS)
5' MIN.
15'
5' MIN.
PROPOSED 1.5' x 3' GABIONS, BOTH BANKS
PROPOSED CONCRETE CUTOFF WALL 4' DEEP x 1' THICK, BOTH BANKS

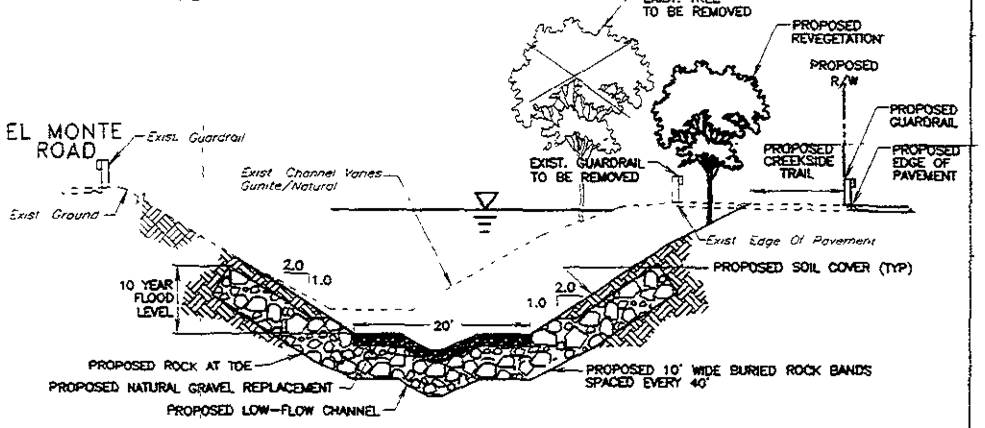
SECTION (D/41) STA. 537+60± TO STA. 540+90±
(SEE NOTE 1)
NTS



SECTION (E/41) STA. 541+60± TO STA. 549+00±
(SEE NOTE 1)
NTS



SECTION (F/41) STA. 528+45± TO STA. 540+90±
(SEE NOTE 1)
NTS
POSSIBLE PROJECT VARIATION
TOE PROTECTION


EXIST. TREE TO BE REMOVED
PROPOSED REVEGETATION
PROPOSED R/W
EL MONTE ROAD
Exist. Guardrail
PROPOSED GUARDRAIL
PROPOSED CREEKSIDE TRAIL
PROPOSED EDGE OF PAVEMENT
Exist Channel Varies Gunite/Natural
EXIST. GUARDRAIL TO BE REMOVED
Exist Ground
Exist Edge Of Pavement
PROPOSED SOIL COVER (TYP)
2.0
1.0
10 YEAR FLOOD LEVEL
1.0
2.0
20'
PROPOSED ROCK AT TOE
PROPOSED NATURAL GRAVEL REPLACEMENT
PROPOSED LOW-FLOW CHANNEL
PROPOSED 10' WIDE BURIED ROCK BANDS SPACED EVERY 40'

SECTION (G/41) STA. 528+45± TO STA. 540+90±
(SEE NOTE 1)
NTS
POSSIBLE PROJECT VARIATION
ROCK BANDS

V	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. Proposed R/W based on channel modification width requirements.
6. Downstream of 537+40: 1% flowrate 2000 cfs.
7. Upstream of 537+40: Main channel—1% flowrate 1100 cfs.
   Bypass channel—1% flowrate 900 cfs.

REGISTERED PROFESSIONAL ENGINEER
SCOTT M. WILSON
NO. 43184
EXP. 3/31/00
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
RANDALL R. TALLEY
No. 25093
EXP. 12/31/01
CIVIL
STATE OF CALIFORNIA

DATE 3/23/99
DESIGN SB
DRAWN RA
CHECKED SB/PS/SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK

STA. 513+30± TO STA. 549+00±

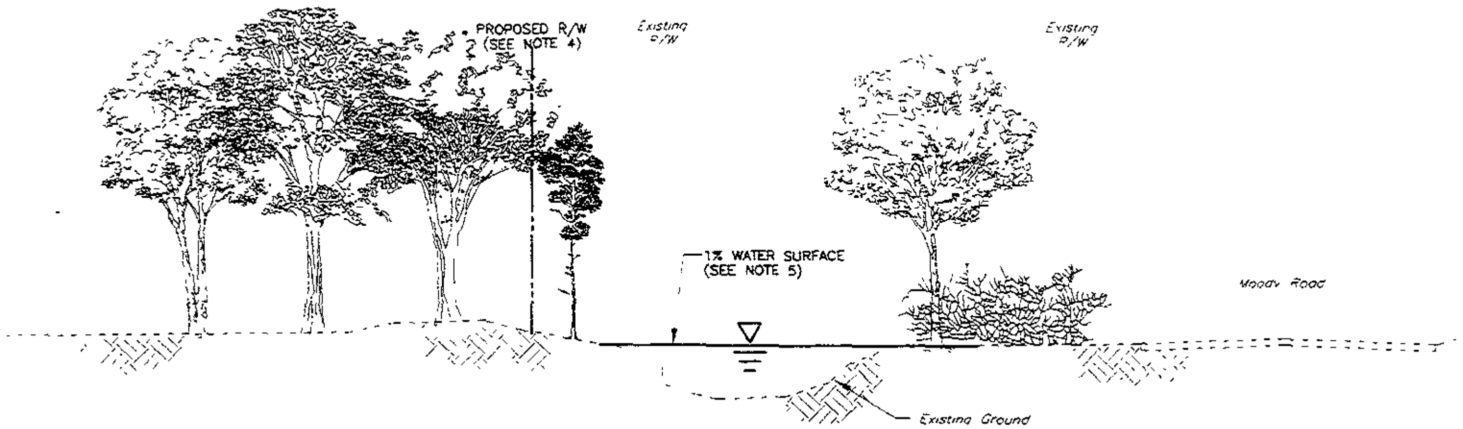
TYPICAL SECTIONS

SCALE AS SHOWN

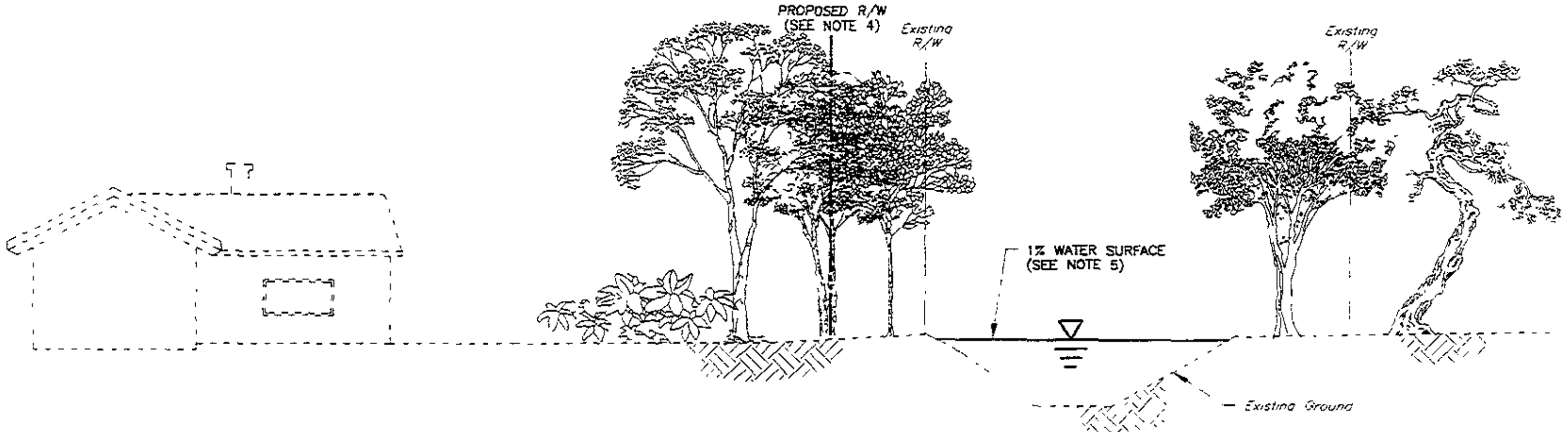
SHEET 41

44 OF 48

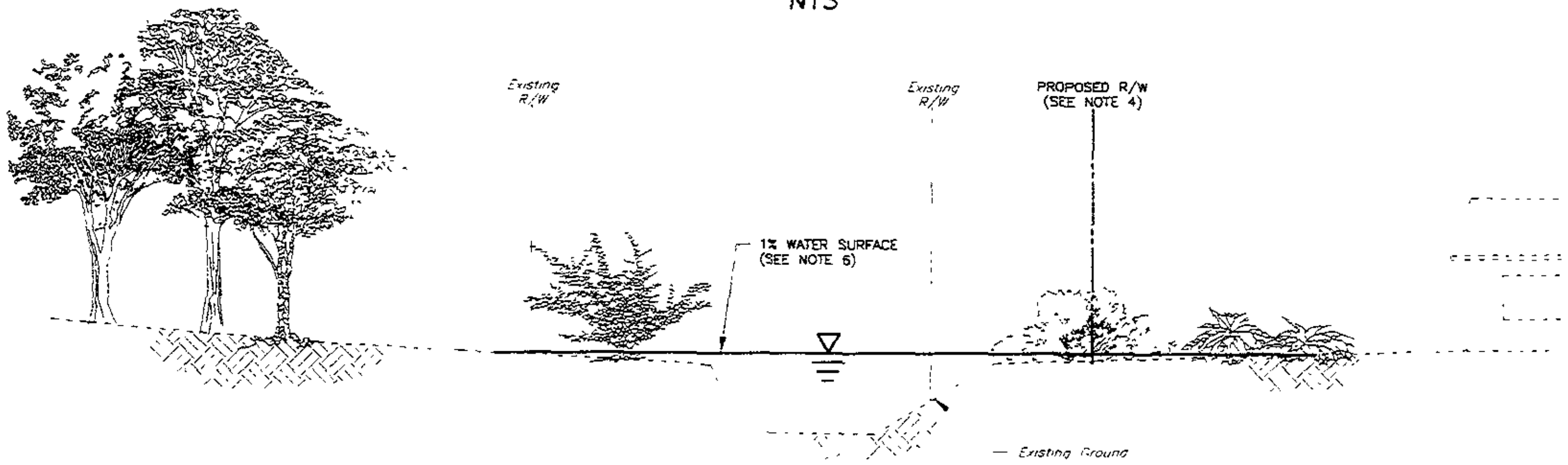
DWGS\P\1010_101\D-SIZE\ACXS_041.dwg



SECTION (A/42) STA. 549+00± TO STA. 558+85±
(SEE NOTE 1)
NTS



SECTION (B/42) STA. 559+95± TO STA. 562+75±
(SEE NOTE 1)
NTS



SECTION (C/42) STA. 563+45± TO STA. 570+50±
(SEE NOTE 1)
NTS

V	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. Downstream of station 563+30: Main channel–1% flowrate 1100 cfs
   Bypass channel–1% flowrate 900 cfs
6. Upstream of station 563+30· 1% flowrate 2000 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE	2/22/99
DESIGN	SB
DRAWN	CM/SL/JA
CHECKED	SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

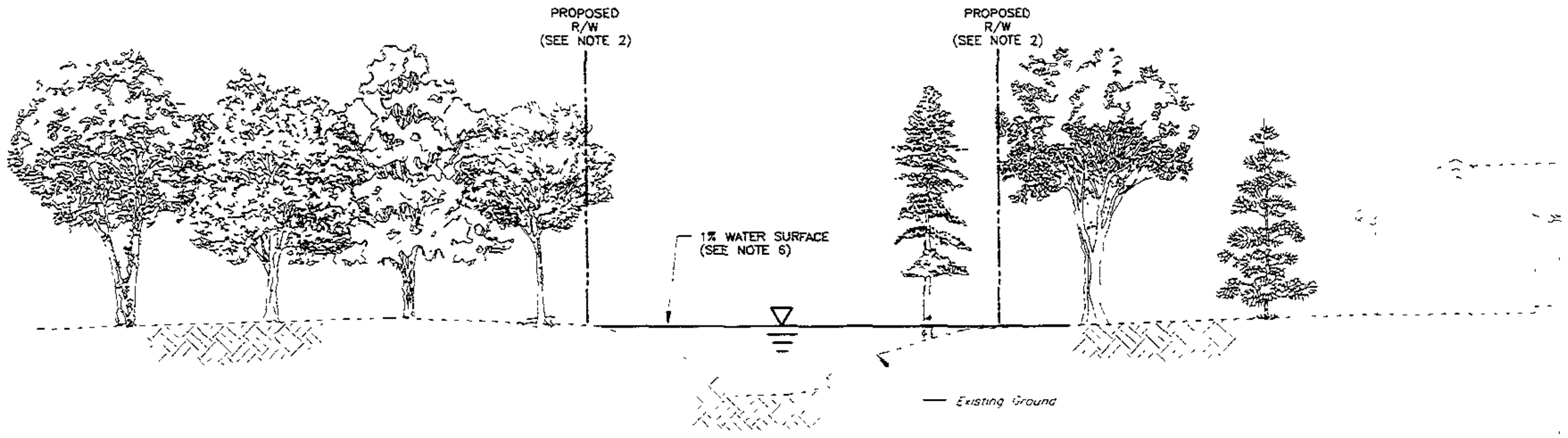
ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
STA. 549+00± TO STA. 570+50±
TYPICAL SECTIONS

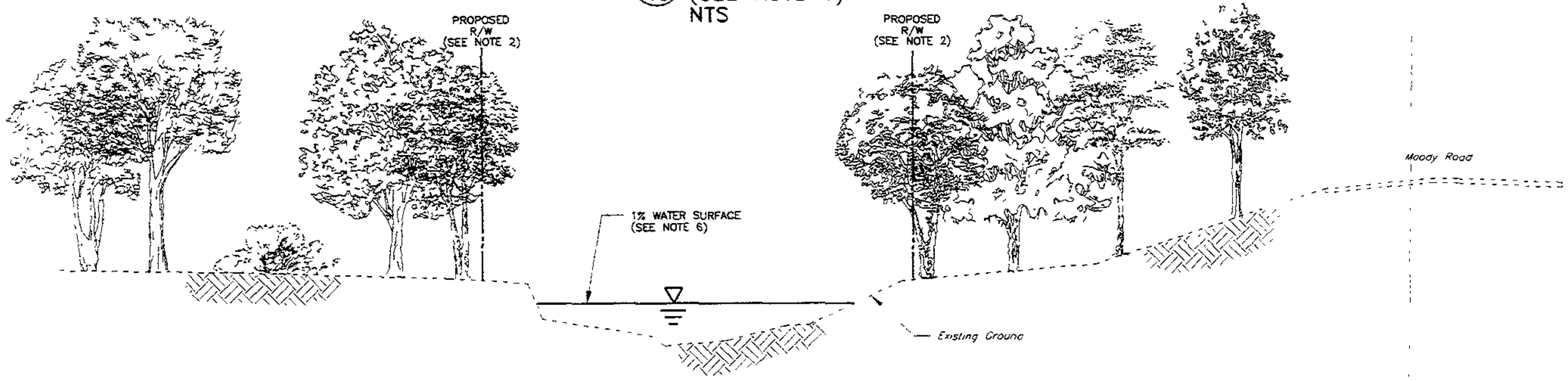
SCALE
AS SHOWN

SHEET
42
45 OF 48

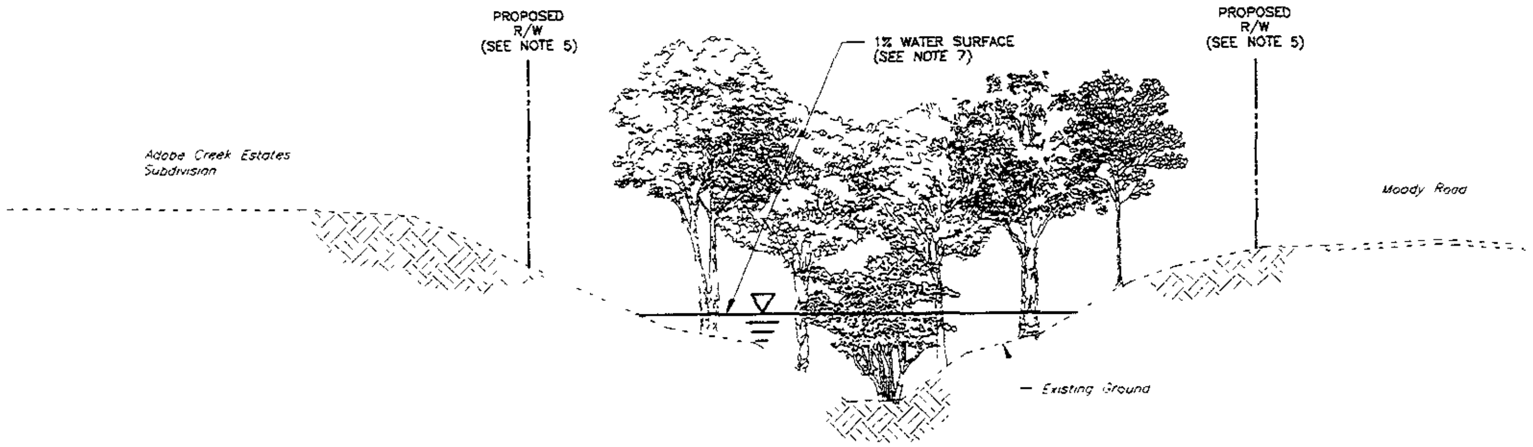
)WGS\P\1010_101\D-SIZE\ACPP_042



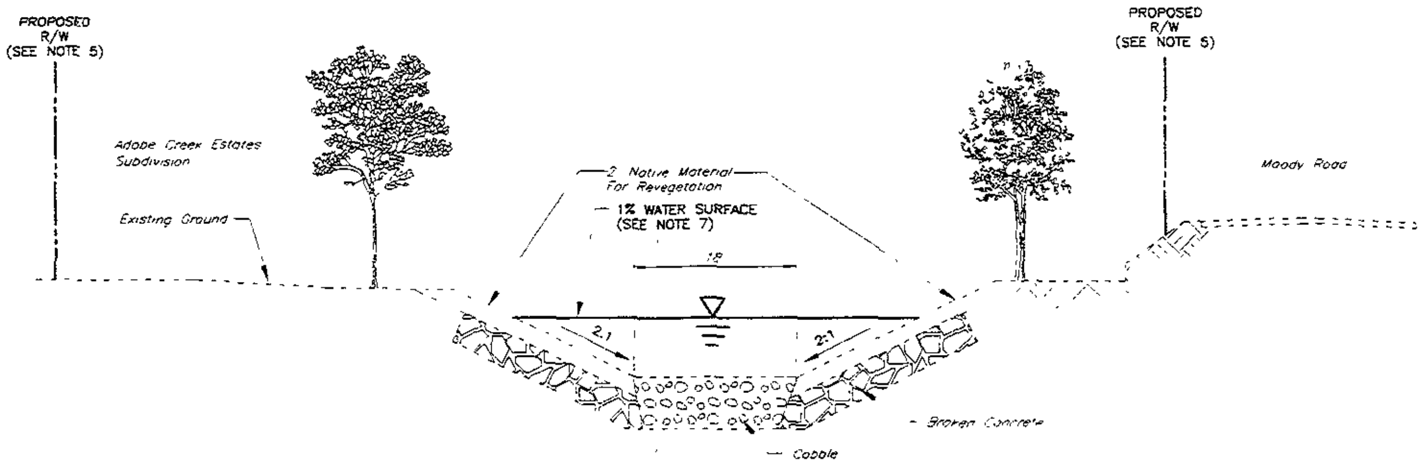
SECTION (A/43) STA. 571+00± TO STA. 580+50±
(SEE NOTE 1)
NTS



SECTION (B/43) STA. 580+50± TO STA. 587+30±
(SEE NOTE 1)
NTS



SECTION (C/43) STA. 588+55± TO STA. 594+20±
(SEE NOTE 1)
NTS



SECTION (D/43) STA. 595+45± TO STA. 595+70±
STA. 596+00± TO STA. 600+90±
STA. 601+20± TO STA. 602+05±
(SEE NOTE 1)
NTS

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. *Reference orientation looking upstream.*
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. Proposed R/W as shown on subdivision development plans.
6. Downstream of station 587+30; 1% flowrate 2000 cfs.
7. Upstream of station 587+30; 1% flowrate 1800 cfs

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN SB
DRAWN CM/SL/JA
CHECKED SW

Santa Clara Valley Water District

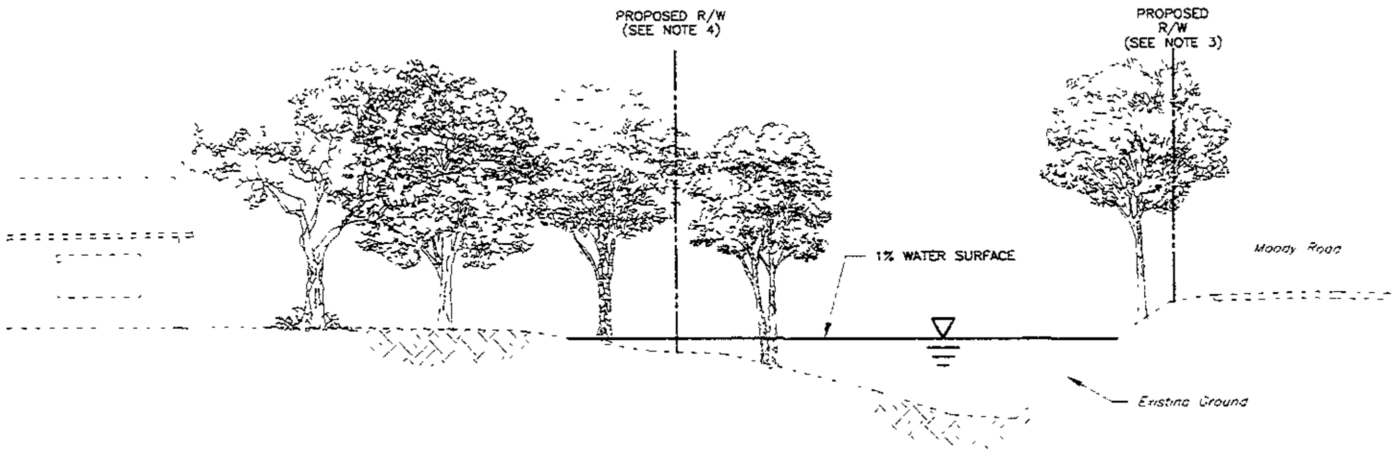
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

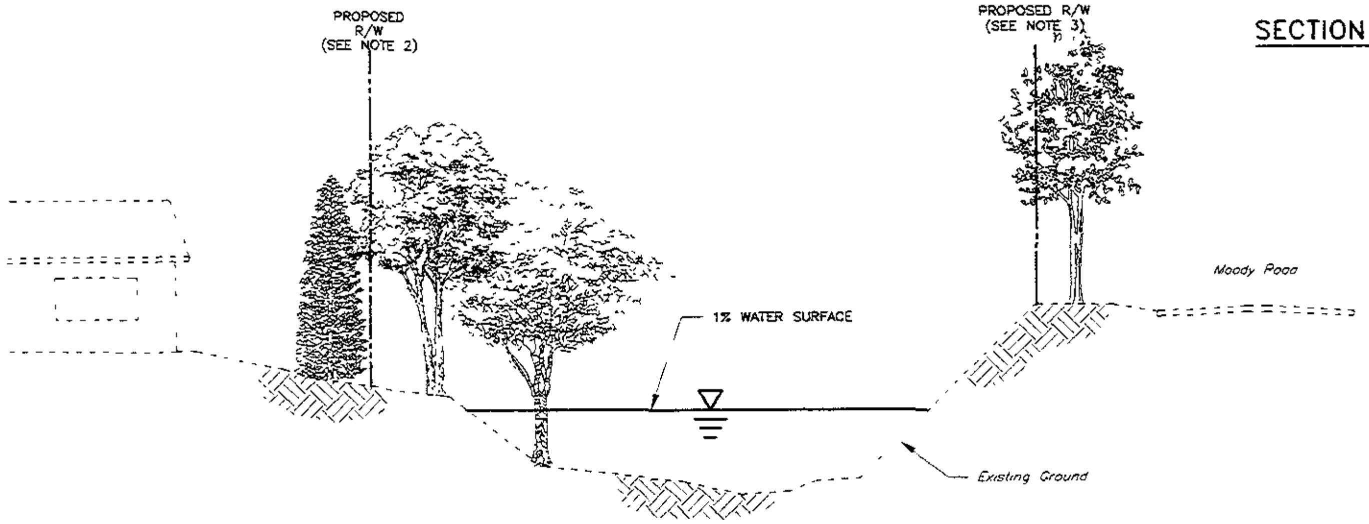
ADOBE CREEK
STA. 571+00± TO STA. 602+05±
TYPICAL SECTIONS

SCALE AS SHOWN
SHEET 43
46 OF 48

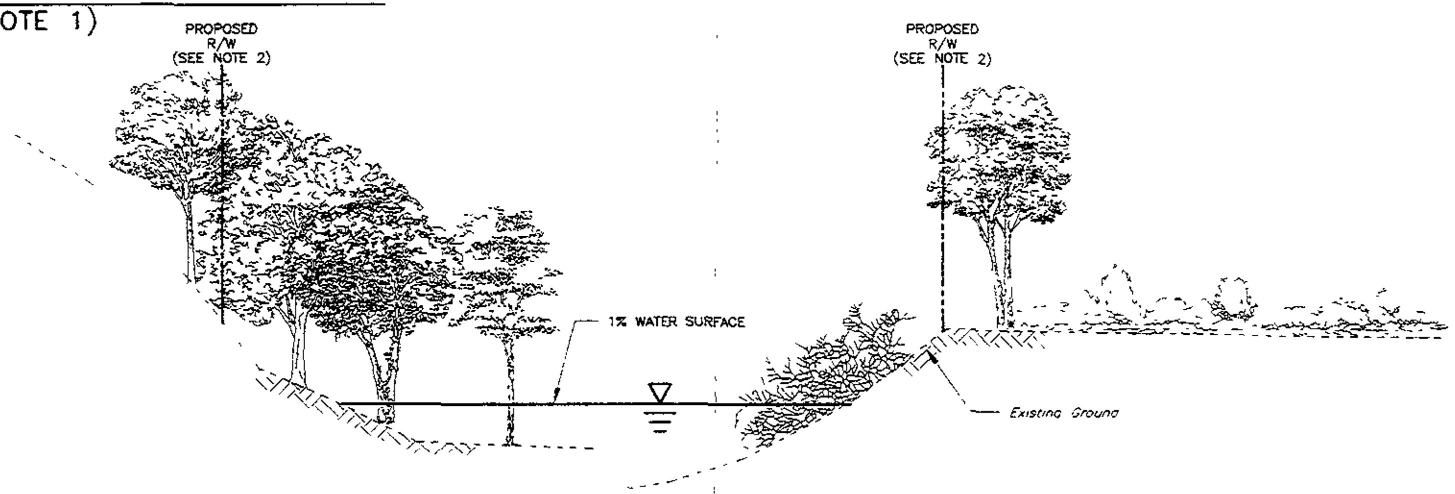
\DWGS\P\1010_101\D-SIZE\ACPP_043.DWG



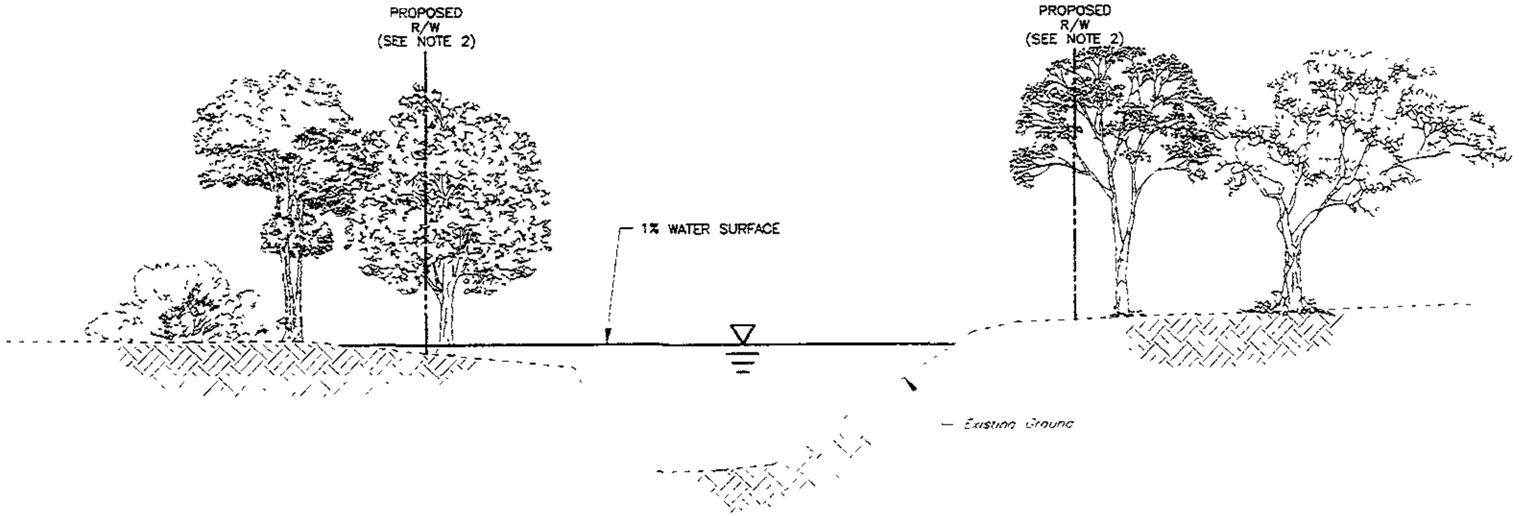
SECTION (A/44) STA. 602+50± TO STA. 613+85±
(SEE NOTE 1)
NTS



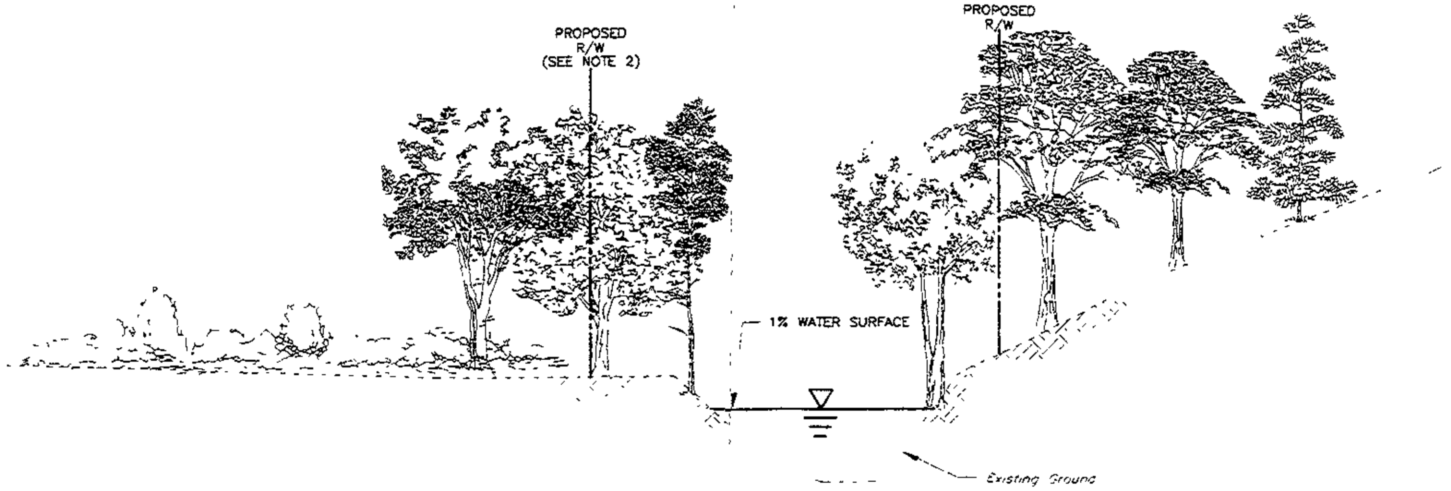
SECTION (B/44) STA. 614+10± TO STA. 618+15±
(SEE NOTE 1)
NTS



SECTION (C/44) STA. 618+15± TO STA. 634+00±
(SEE NOTE 1)
NTS



SECTION (D/44) STA. 634+00± TO STA. 645+50±
(SEE NOTE 1)
NTS



SECTION (E/44) STA. 645+50± TO STA. 658+00±
(SEE NOTE 1)
NTS

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. *Proposed R/W based on restricted conditions due to existing structures.*
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank
5. 1% flowrate 1800 cfs.

SCOTT M. WILSON NO. 43184 EXP. 3/31/00

RANDALL R. TALLEY No. 25093 EXP. 12/31/01

DATE	2/22/99
DESIGN	SB
DRAWN	CM/SL/JA
CHECKED	SW

Santa Clara Valley Water District

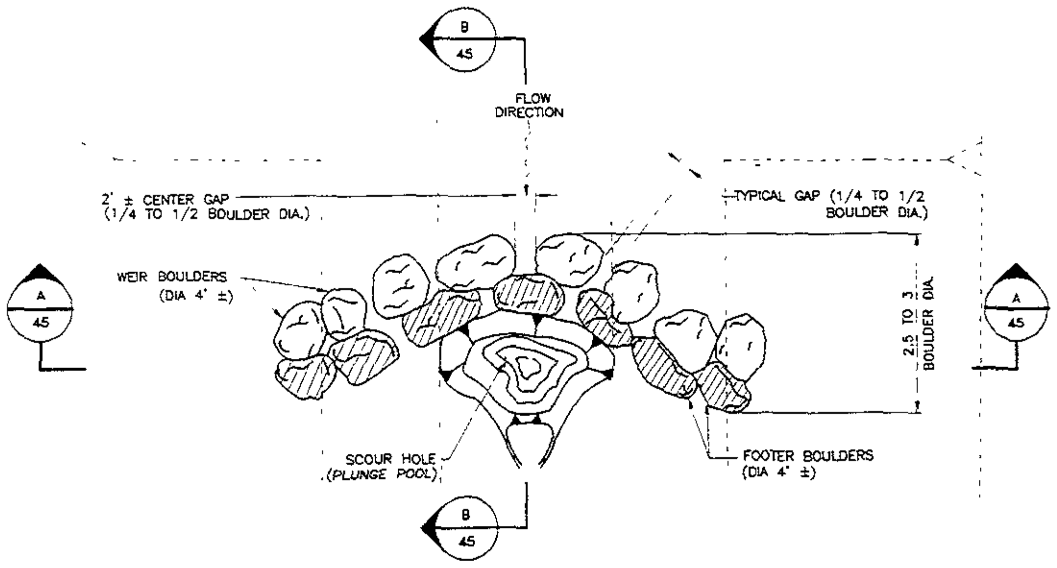
ENGINEERING CERTIFICATION	ENGINEERING APPROVAL
PROJECT ENGINEER R.C.E. NO 43184	SUPERVISING ENGINEER R.C.E. NO 25093

ADOBE CREEK
STA. 602+50± TO STA. 658+00±
TYPICAL SECTIONS

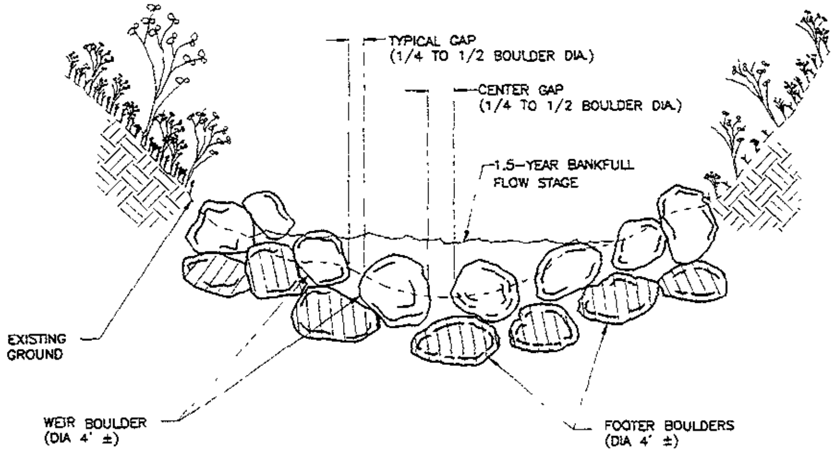
SCALE
AS SHOWN

SHEET
44
47 OF 48

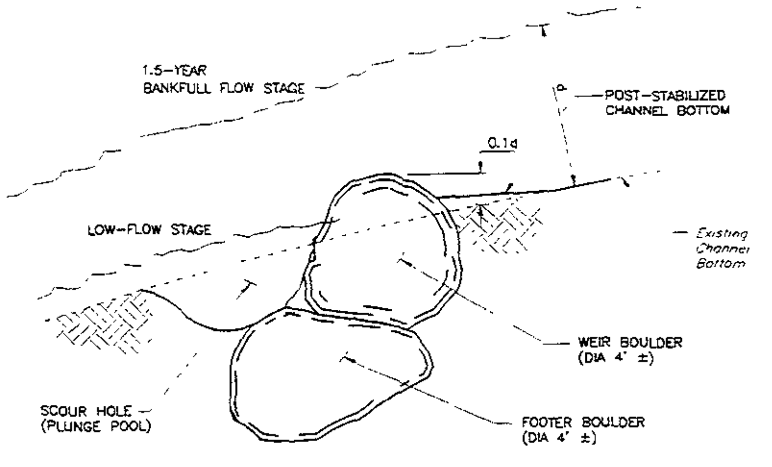
DWGS\P\1010_101\D-SIZE\ACPP_044.DWG


B
45
FLOW DIRECTION
2' ± CENTER GAP (1/4 TO 1/2 BOULDER DIA.)
TYPICAL GAP (1/4 TO 1/2 BOULDER DIA.)
WEIR BOULDERS (DIA 4' ±)
A
45
2.5 TO 3 BOULDER DIA.
A
45
SCOUR HOLE (PLUNGE POOL)
FOOTER BOULDERS (DIA 4' ±)
B
45

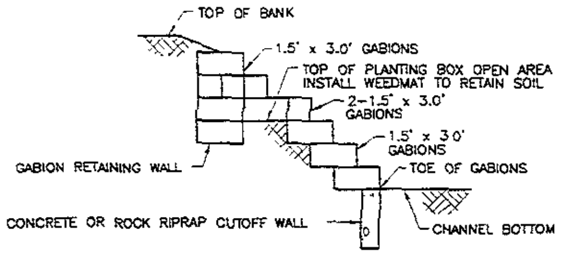
DETAIL (1/45) PLAN VIEW VORTEX ROCK WEIR
NTS


TYPICAL GAP (1/4 TO 1/2 BOULDER DIA.)
CENTER GAP (1/4 TO 1/2 BOULDER DIA.)
1.5-YEAR BANKFULL FLOW STAGE
EXISTING GROUND
WEIR BOULDER (DIA 4' ±)
FOOTER BOULDERS (DIA 4' ±)

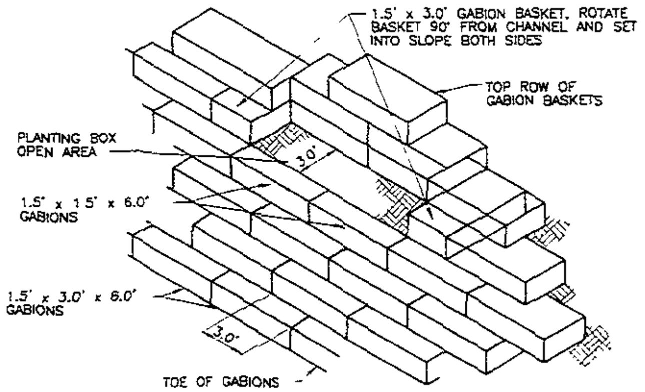
SECTION (A/45) VORTEX ROCK WEIR (LOOKING UPSTREAM)
NTS



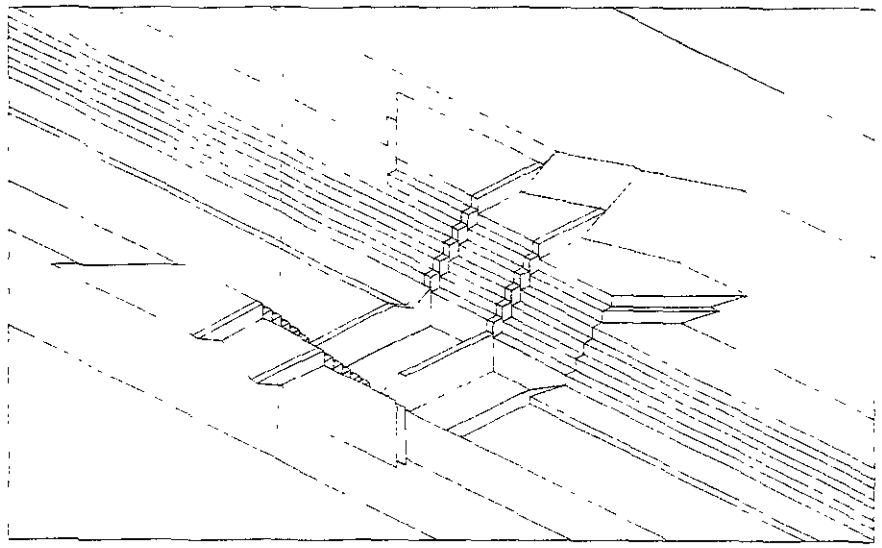
SECTION (B/45) PROFILE VIEW VORTEX ROCK WEIR
NTS



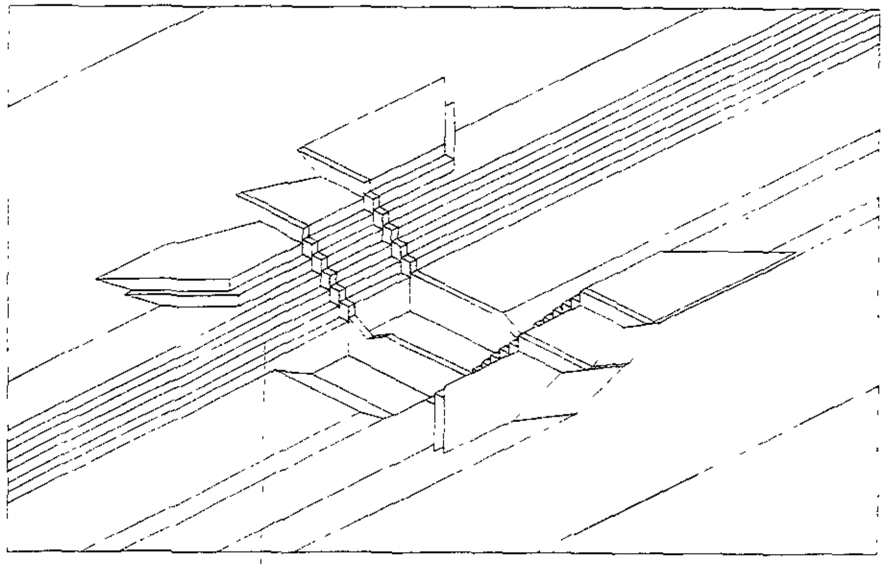
DETAIL (2/45) GABION PLANTING BOX
NTS


1.5' x 3.0' GABION BASKET. ROTATE BASKET 90° FROM CHANNEL AND SET INTO SLOPE BOTH SIDES
TOP ROW OF GABION BASKETS
PLANTING BOX OPEN AREA
3.0'
1.5' x 1.5' x 6.0' GABIONS
1.5' x 3.0' x 6.0' GABIONS
3.0'
TOE OF GABIONS

DETAIL (3/45) GABION PLANTING BOX
NTS



DETAIL (4/45) DOUBLE GRADE STABILIZER (3-D) VIEW FROM EL MONTE ROAD
NTS



DETAIL (5/45) DOUBLE GRADE STABILIZER (3-D) VIEW FROM FOOTHILL COLLEGE PARKING LOT A
NTS

V	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN			

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00
CIVIL

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01
CIVIL

DATE 2/22/99
DESIGN PS/TI
DRAWN RA/SL/JA
CHECKED SW

Santa Clara Valley Water District

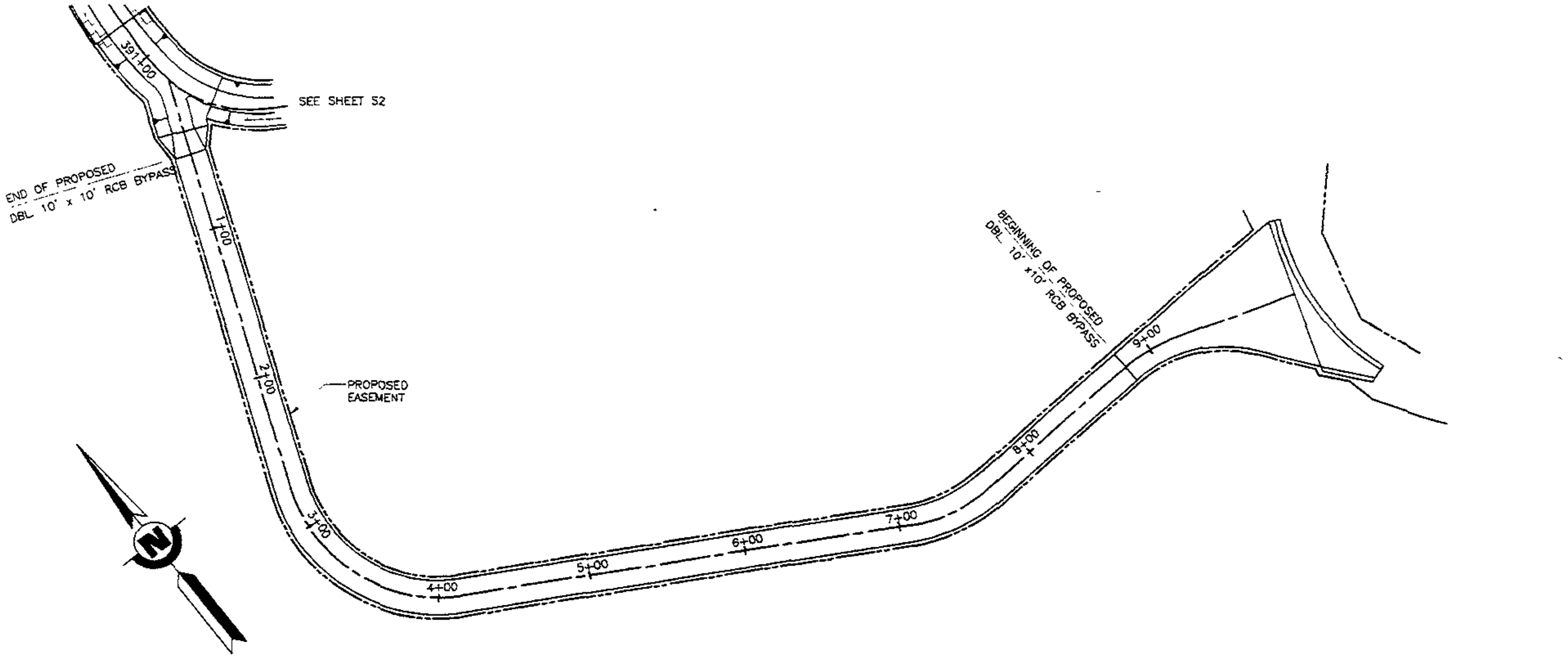
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
DETAIL SHEET

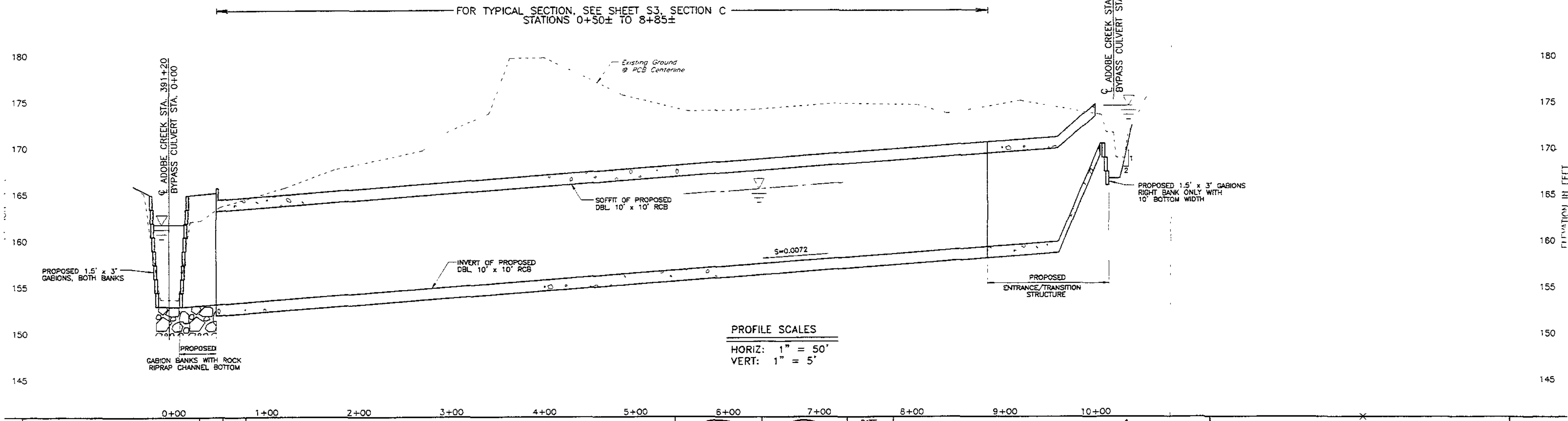
SCALE AS SHOWN
SHEET 45
48 OF 48

WGS\P\1010_101\D-SIZE\ACDT__45


391+00
SEE SHEET S2
END OF PROPOSED DBL 10' x 10' RCB BYPASS
1+00
2+00
PROPOSED EASEMENT
3+00
4+00
5+00
6+00
7+00
8+00
9+00
BEGINNING OF PROPOSED DBL 10' x10' RCB BYPASS
N

PLAN

SCALE: 1" = 50'


FOR TYPICAL SECTION, SEE SHEET S3, SECTION C
STATIONS 0+50± TO 8+85±
180
175
170
165
160
155
150
145
℄ ADOBE CREEK STA. 391+20
BYPASS CULVERT STA. 0+00
Existing Ground @ PCB Centerline
SOFFIT OF PROPOSED DBL 10' x 10' RCB
INVERT OF PROPOSED DBL 10' x 10' RCB
S=0.0072
PROPOSED 1.5' x 3' GABIONS, BOTH BANKS
PROPOSED
GABION BANKS WITH ROCK RIPRAP CHANNEL BOTTOM
℄ ADOBE CREEK STA. 402+70
BYPASS CULVERT STA. 10+20
PROPOSED 1.5' x 3' GABIONS RIGHT BANK ONLY WITH 10' BOTTOM WIDTH
1
2
PROPOSED ENTRANCE/TRANSITION STRUCTURE
ELEVATION IN FEET
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00

PROFILE SCALES

HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR
	REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES
1. Bypass channel–1% flowrate 2200 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/98
DESIGN PS/SS
DRAWN CM/SL/JA
CHECKED S. Wilson

Santa Clara Valley Water District

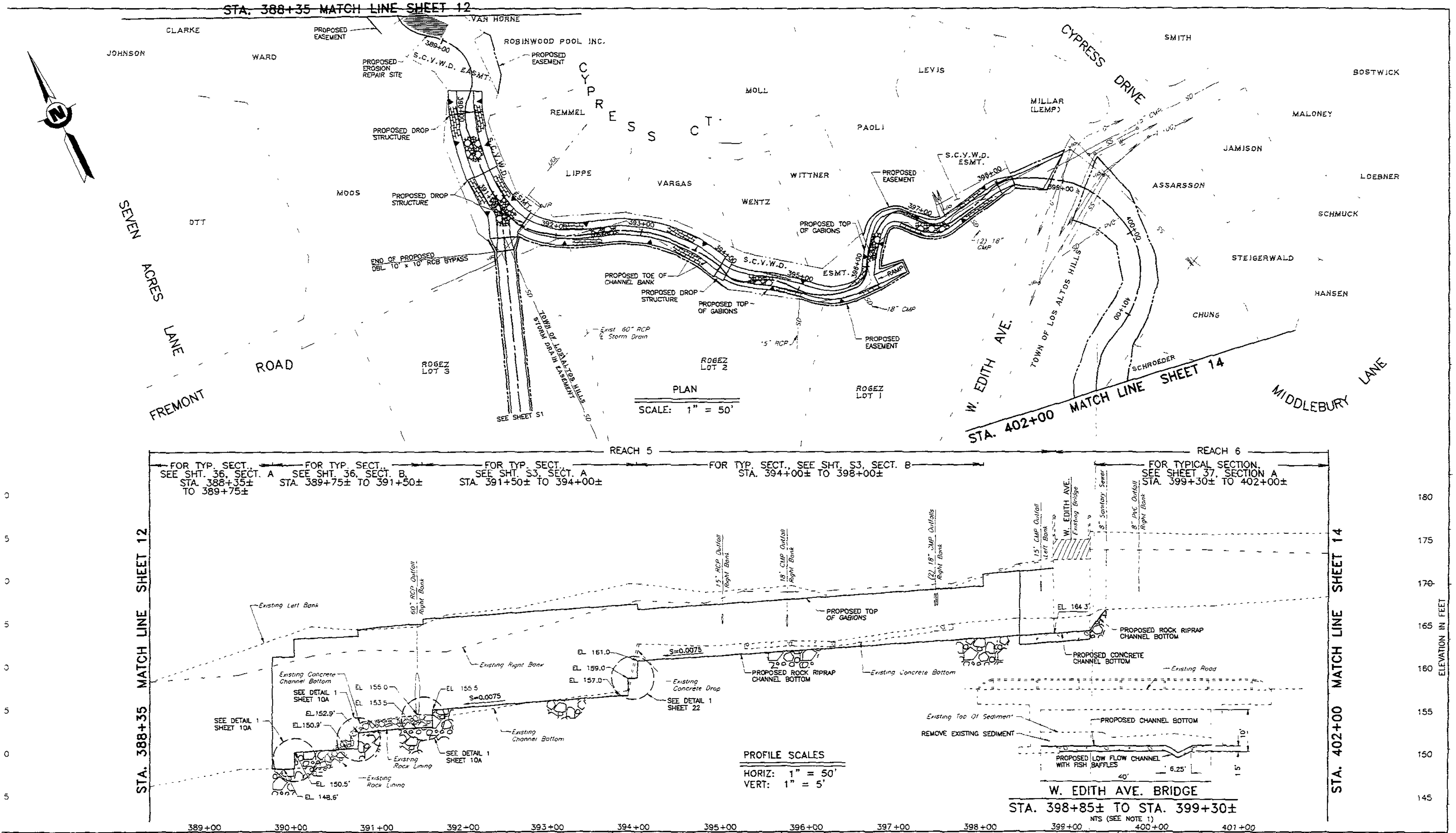
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO.

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO.

ADOBE CREEK
BOX CULVERT BYPASS ALTERNATIVE
BYPASS CULVERT ALIGNMENT

SCALE AS SHOWN
SHEET S1
1 of 3

DWGS\P\1010_111\D-SIZE\ACpp_s1.DWG



DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Reference orientation looking upstream.
2. D/S of STA. 391+25: 1% flowrate 2700 cfs.
3. U/S of STA. 391+25: existing channel alignment–1% flowrate 500 cfs. bypass channel–1% flowrate 2200 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE 2/22/99
DESIGN PS/SS
DRAWN SL/CM/JA
CHECKED SW

Santa Clara Valley Water District

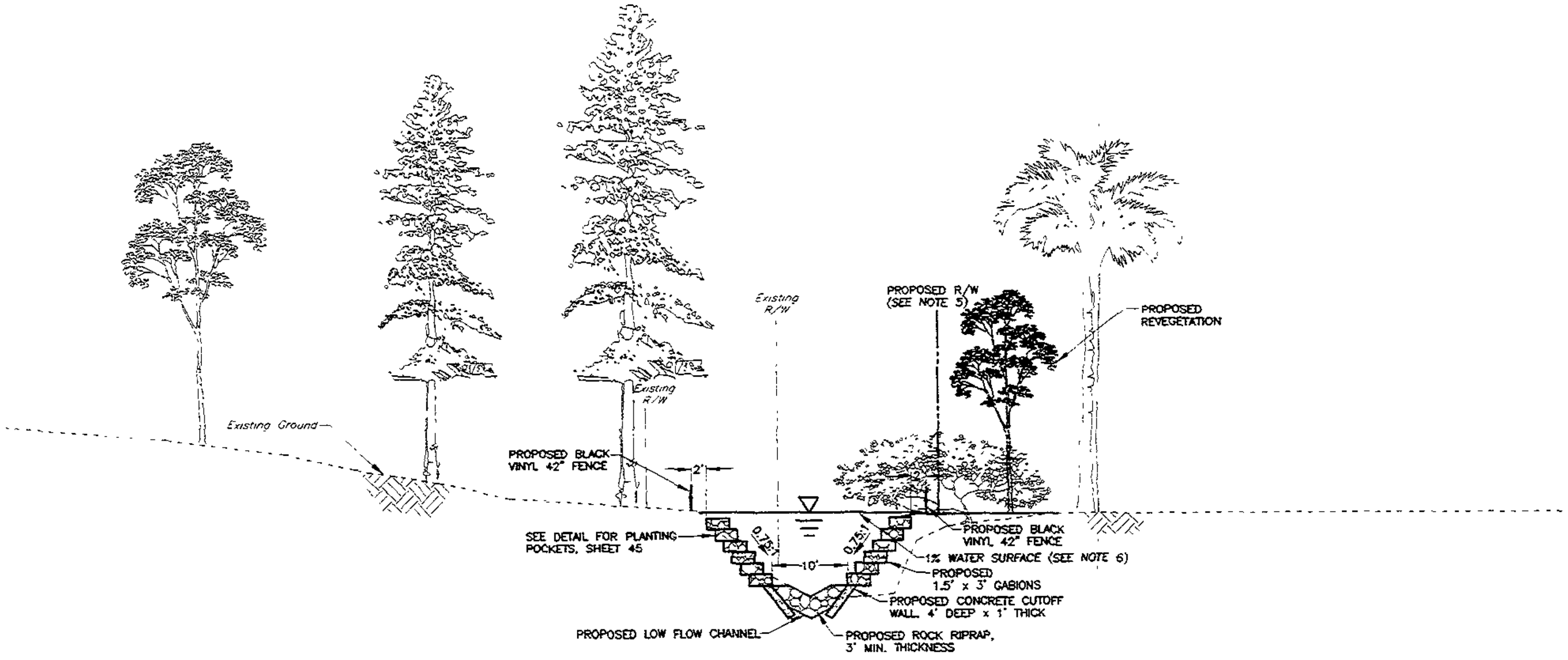
ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

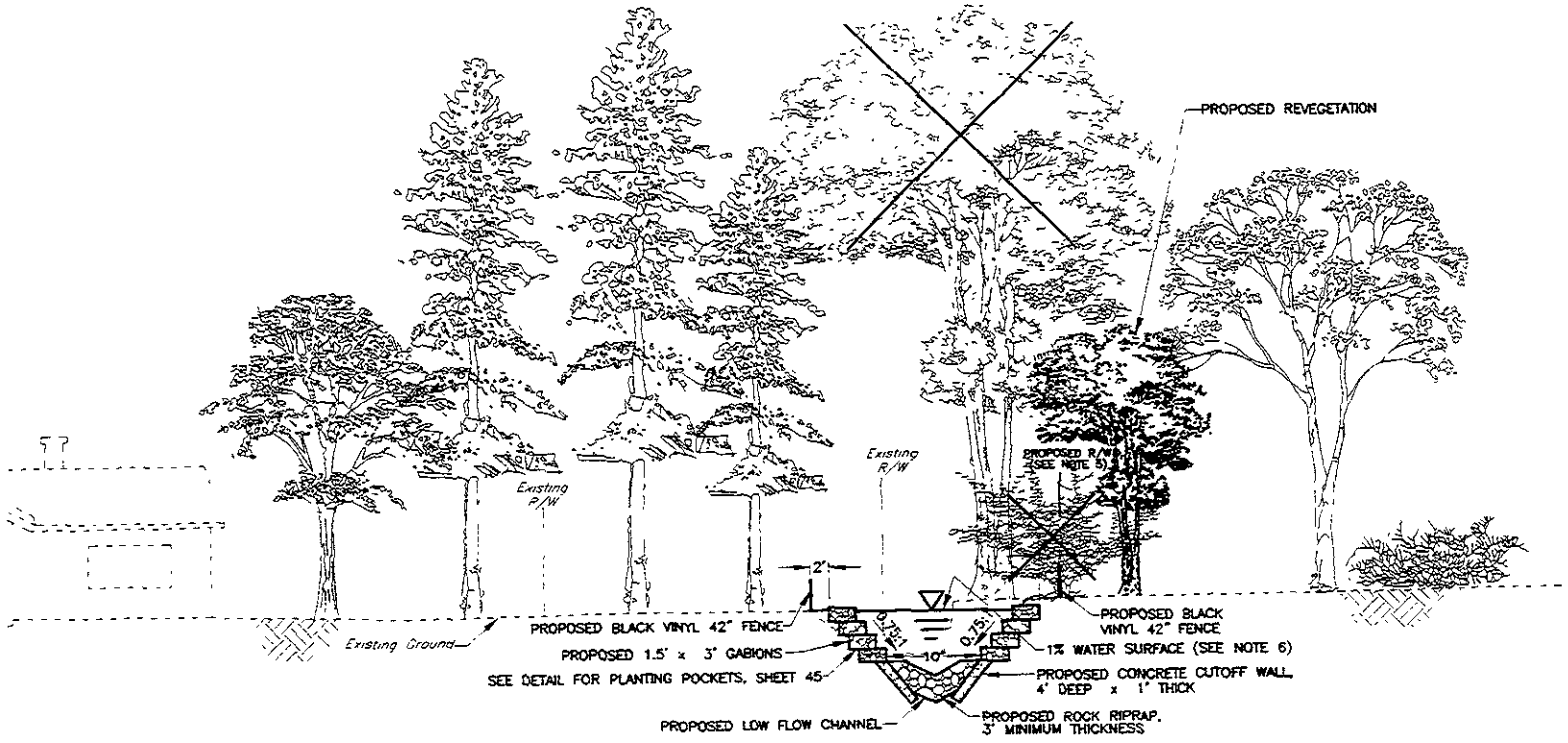
ADOBE CREEK
BOX CULVERT BYPASS ALTERNATIVE
EXISTING CHANNEL ALIGNMENT

SCALE AS SHOWN
SHEET S2
2 OF 3

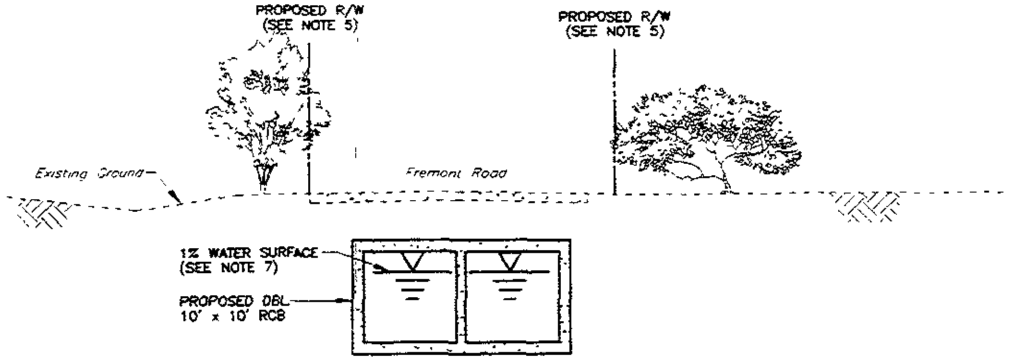
:S\P\1010_101\D-SIZE\ACPP__S2


Existing Ground
Existing R/W
Existing R/W
PROPOSED R/W (SEE NOTE 5)
PROPOSED REVEGETATION
PROPOSED BLACK VINYL 42" FENCE
2'
SEE DETAIL FOR PLANTING POCKETS, SHEET 45
0.75:1
0.75:1
10'
PROPOSED BLACK VINYL 42" FENCE
1% WATER SURFACE (SEE NOTE 6)
PROPOSED 1.5' x 3' GABIONS
PROPOSED CONCRETE CUTOFF WALL, 4' DEEP x 1' THICK
PROPOSED LOW FLOW CHANNEL
PROPOSED ROCK RIPRAP, 3" MIN. THICKNESS

SECTION (A / S3) STA. 391+50± TO STA. 394+00±
(SEE NOTE 1)
NTS


PROPOSED REVEGETATION
Existing R/W
Existing R/W
PROPOSED R/W (SEE NOTE 5)
2'
Existing Ground
PROPOSED BLACK VINYL 42" FENCE
PROPOSED 1.5' x 3' GABIONS
SEE DETAIL FOR PLANTING POCKETS, SHEET 45
0.75:1
0.75:1
10'
PROPOSED BLACK VINYL 42" FENCE
1% WATER SURFACE (SEE NOTE 6)
PROPOSED CONCRETE CUTOFF WALL, 4' DEEP x 1' THICK
PROPOSED LOW FLOW CHANNEL
PROPOSED ROCK RIPRAP, 3' MINIMUM THICKNESS

SECTION (B / S3) STA. 394+00± TO STA. 398+00±
(SEE NOTE 1)
NTS


PROPOSED R/W (SEE NOTE 5)
PROPOSED R/W (SEE NOTE 5)
Existing Ground
Fremont Road
1% WATER SURFACE (SEE NOTE 7)
PROPOSED DBL 10' x 10' RCB

SECTION (C / S3) STA. 0+50± TO STA. 8+85±
(SEE NOTE 1)
NTS

DESCRIPTION	DATE	APPR
REDUCED PLAN USE SCALE BELOW 0 1 2 3 3 INCHES ON ORIGINAL PLAN		

REFERENCE INFORMATION AND NOTES

1. Reference orientation looking upstream.
2. Proposed R/W based on a slope of 2:1 from existing toe of channel.
3. Proposed R/W based on restricted conditions due to existing structures.
4. Proposed R/W based on a slope of 2:1 from existing toe or a minimum of 10 feet from top of the low bank.
5. Proposed R/W based on channel modification width requirements.
6. 1% flowrate main channel 500 cfs.
7. 1% flowrate bypass channel 2200 cfs.

SCOTT M. WILSON
NO. 43184
EXP. 3/31/00

RANDALL R. TALLEY
No. 25093
EXP. 12/31/01

DATE
3/9/99
DESIGN
PS
DRAWN
CAM
CHECKED
SW

Santa Clara Valley Water District

ENGINEERING CERTIFICATION
PROJECT ENGINEER R.C.E. NO. 43184

ENGINEERING APPROVAL
SUPERVISING ENGINEER R.C.E. NO. 25093

ADOBE CREEK
BOX CULVERT BYPASS ALT.
TYPICAL SECTIONS

SCALE
AS SHOWN
SHEET
S3
3 OF 3

S\P\1010_101\D-SIZE\ACXS_S3

APPENDIX A

LIST OF TECHNICAL TERMS AND ACRONYMS

Acre-Foot	A quantity of water that would cover 1 acre to a depth of 1-foot, equal to about 325,000 gallons.
Ad Valorem Tax	A tax based on property value.
Aggradation	The geologic process by which streambeds and floodplains are raised in elevation by the deposition of material eroded and transported from other areas. It is the opposite of degradation.
Alluvial	Deposition by the action of running or receding water.
Amortization	The process of liquidating a debt by installment payments or payment into a sinking fund; to prorate over a defined period at a specified interest rate.
Antecedent	An event that precedes another event.
Aquatic Herbicides	Herbicides that are approved by Federal and State authorities for use on vegetation in or near waterbodies, such as creeks or lakes. When aquatic herbicides are applied, the solution which is not absorbed by plant tissue ends up on the soil or in the water. The composition of the herbicide allows it to bind easily and strongly to soil particles (either on the ground or those which are suspended in water). In a relatively short time, the herbicide breaks down readily into harmless chemical compounds (carbon, oxygen, etc.). Until this occurs, the herbicide is tied up in the soil. For these reasons, aquatic herbicides are not considered a hazard to water quality. The District has state licensed vegetation technicians that apply herbicides.
Articulated Concrete Blocks (ACB)	Small interlocking precast concrete blocks tied together in a mat with high strength polyester cables. Used for erosion protection on creek banks and inverts. Available with holes for vegetative growth and percolation through the blocks.
ASTM	American Society for Testing Materials.
Bankfull Discharge	A flow condition in which stream flow completely fills the stream channel up to the top of the low bank in floodplain areas. This condition occurs on the average every 1½ to 2 years and controls the shape and form of natural channels. Also called channel forming discharge.
BAT	Best Available Technology.
BCT	Best Conventional Pollution Control Technology.
Bed Load	Sediment bouncing or rolling along the bottom of a stream. See also *suspended load.*

Benefit Assessment	Revenues that supplement other available but limited revenues sufficiently to keep the existing flood protection system in a safe and effective condition; to perform maintenance and repair; to provide for needed new flood control construction, and, in general, to provide all flood control services to the public. The assessments are levied in proportion to benefits received; that is, on the basis of proportionate storm water runoff from each parcel. The assessment per single family residence is uniform zonewide ($61.52 per year in FY 1998-99).
bgs	Below ground surface.
Biotechnical Slope Protection	The use of mechanical elements (or structures) in combination with biological (or plants) to arrest and prevent slope failures and erosion.
BMP	Best Management Practice.
Bole	Term referring to the stem or trunk of a tree.
Brush Mattress	A mattress-like covering that is placed on top of the soil. The covering *material is living woody plant cuttings that are capable of rooting.*
CalTrans	California Department of Transportation.
CDFG	California Department of Fish and Game.
CEQA	California Environmental Quality Act.
CERCLA	Comprehensive Environmental Response and Liability Act.
Channel Forming Discharge	See Bankfull Discharge.
CIP	Cast Iron Pipe.
CMP	Corrugated Metal Pipe.
CNDDB	California Natural Diversity Data Base.
CNPS	California Native Plant Society.
Cobble	Sediment particles larger than pebbles and smaller than boulders. Usually 3 to 8 inches in diameter.
Confluence	The junction of two streams.
Contour Wattles	Sausage-like bundles of living woody plant cuttings that are tied together. These fabricated structures are capable of rooting. Also called fascines.
Corps	*United States Army Corps of Engineers.*
County	Santa Clara County.
Cross Section	A vertical section of a stream channel or structure that provides a side view of the structure; a transect taken at right angles to flow direction.
Cubic Foot Per Second (cfs)	A rate of flow equivalent to 1 cubic foot, about 7½ gallons, passing a point during 1 second (approximately 450 gallons/minute).
CZARA	Coastal Zone Act and Reauthorization Amendments.
Decibel (dBA)	A unit for measuring the volume of a sound.

Degradation	The geologic process by which stream and river beds lower in elevation. It is the opposite of aggradation.
Design Flow	The magnitude of streamflow that is used in design of channel modifications and structures across channels.
Diameter at Breast Height (DBH)	The average diameter (outside of bark) of a tree approximately 4½ feet above the average ground level. This is used by maintenance personnel in determining when vegetation in creeks is to be cut.
Discharge	The volume of water passing through a channel during a given period of time. Usually measured in cubic feet per second.
District	Santa Clara Valley Water District.
DWR	Department of Water Resources.
EIR	Environmental Impact Report.
Ephemeral Stream	A stream that flows briefly only in direct response to precipitation in the immediate locality and whose channel is at all times above the water table. The majority of Adobe Creek is ephemeral. See Perennial Streams.
EPA	Environmental Protection Agency.
ER	Engineer's Report.
FCE	Flood control easement.
FEMA	Federal Emergency Management Agency.
Fish Passage	A term used to identify sections of the creek that can be navigated by migrating fish. Includes low-flow channels with barriers, drop structures that fish can jump, etc.
Freeboard	Vertical distance between the top of an embankment adjoining a channel and the water level in the channel. It is a factor of safety designed into a project.
Floodwaters	Those flows of water that cannot be contained within the natural stream channel.
Floodplain	A wide, gently sloping area adjacent to the creek that is subject to periodic flooding.
Fluvial Geomorphology	The study of the form or shape of stream channels as they flow over the land.
Gabion	A wire mesh rectangular basket filled with uniformly sized rocks.
Geocell	A series of symmetrical shaped cells made of high strength plastic joined together sharing common walls such that the final system confines in fill material within the cells. Placed in stepped layers, this can be used for bank protection (sometimes called Geoweb®).
Gravel	Sediment particles larger than sand and ranging from 0.25 to 3 inches in diameter.

Groin (River Training Structure)	Any configuration of a wall constructed in the stream at an abrupt angle (usually perpendicular) to the streambank that is intended to deflect water currents, induce sediment deposition or scour, create fish pool and rearing habitat, or in some way alter the flow and sediment regimes of the stream. Groins also create quiet water resting areas for use by upstream migrating spawners. Groins are usually constructed entirely of rock riprap or of compacted earth faced with riprap.
Gunite	Concrete that is pumped through a pipe and sprayed on a creek bank. This type of bank protection is used only on steep creek banks in narrow, highly erosive sections of the creek (channel bottom).
HSLA	Hazardous substances liability assessment.
ICID	Illicit Connection and Illegal Dumping Identification and Elimination.
IND	Industrial and Commercial Discharges Control.
Invert	The lowest point in the bed or channel of a river or stream.
Joint Planting	The process of placing live woody plant cuttings in the spaces between pieces of rock riprap. When placed properly, the cuttings are capable of rooting and growing.
LED	Limited maintenance easement deed.
Levees	Earth embankments that are constructed next to watercourses to contain flood flows.
Live Stakes	Live, woody plant cuttings, capable of rooting, that are taken from shrubs and trees.
Low Flow Channel	A subchannel of the main stream channel that is desgined to concentrate low flows for biological or aesthetic reasons.
LUST	Leaking Underground Storage Tank.
Mean Sea Level	The average height of the surface of the sea for all stages of the tide over a 19-year period.
MET	Metals Control Measures.
Mitigation	To moderate, reduce, alleviate the impacts of a proposed activity; includes, in order: (a) avoiding the impact by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitation, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; (e) compensating for the impact by replacing or providing substitute resources or environments (Council of Environmental Quality, 1978).
Modified Floodplains	A channel type which preserves the natural creek environment by utilizing setback flood protection (levees or floodwalls) allowing the creek to take its natural course within the levees or floodwalls.
MOU	Memorandum of Understanding.

National Geodetic Vertical Datum (NGVD)	The mean sea level in 1929. See Mean Sea Level.
NEPA	National Environmental Policy Act.
NMFS	National Marine Fisheries Service.
NFIP	National Flood Insurance Program.
NPDES	National Pollutant Discharge Elimination System.
One Hundred Year Flood	See One Percent Flood.
One Percent (1%) Flood	The flood that has a 1 percent chance of being equalled or exceeded in any 1 year (see Appendix H).
Ordinary High Water (Waters of the United States)	The area of a watercourse subject to Section 404 of the Federal Clean Water Act of 1972. The area affected is determined by the elevation of the 2.3-year flood event (ordinary high water flow) which is field checked by biologists using physical characteristics.
Overbank	In a river or creek, the area between the main channel and the limits of the floodplain.
PAA	Public Agency Activities.
PAH	Polynuclear Aromatic Hydrocarbon.
Perennial Stream	A stream that flows continuously throughout the year. See Ephemeral Stream.
PI/P	Public Information/Participation Program.
PVC	Polychlorinated Vinyl Pipe.
Raw Water	Nonpotable water or water that has not been treated for drinking.
RCP	Reinforced Concrete Pipe.
Reach	A subdivision of the creek for convenience of study and reference.
Riparian	Vegetation and wildlife living within, and immediately adjacent to, a river, stream or lake. In this report, riparian means the creek environment.
Riprap	A protective layer or facing of quarrystone placed to prevent erosion, scour, or slouching of an embankment. Also called rock lining.
Rock Lining	See riprap. In this project most rock-lined areas will also be filled with soil and revegetated.
Root Wad	The root mass of a tree.
Roughness Coefficient	Represents the frictional resistance of a surface to the flow of water. Used in hydraulic computations.
RWQCB	Regional Water Quality Control Board.
Sacked Concrete Scope Protection (SCSP)	Burlap bags filled with concrete and placed on a stream bank to protect the bank against erosion.

SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program.
Shaded Riverine Aquatic (SRA) Cover	Near shore aquatic area at the interface between a river and adjacent woody riparian habitat.
SPRR	Southern Pacific Railroad.
Suspended Load	The part of the total sediment load that is carried for a considerable period of time at the velocity of the flow, free from contact with the streambed. See also *bed load*.
SWID	Storm Water Infiltration Device.
SWPPP	Storm Water Pollution Prevention Plan.
SWRCB	California State Water Resources Control Board.
TPH	Total Petroleum Hydrocarbons.
USFWS	United States Fish and Wildlife Service.
USGS	United Stated Geological Survey.
UST	Underground Storage Tank.
VCP	Vitrified Clay Pipe.
Vegetated Geogrid	Soil wrapped with a geotextile fabric and with live woody plant cuttings placed in between each soil/geotextile wrap.
VOC	Volatile Organic Hydrocarbons.
Vortex Rock Weir	A stream channel stabilization structure formed with boulders in the streambed in an arch shape (open end of the arch pointing downstream). The reverse arch shape of the weir induces a vortex in the center of the streambed downstream of the weir.
Watershed	The geographical region or area drained by a stream. Also referred to as a drainage basin.
Weir	A wall or obstruction built across the full width of a creek, with a horizontal crest over which the water flows. It is built to hold up water or stabilize the creek bottom.
Wetlands	As used herein, areas that under normal circumstances have hydrophytic vegetation, hydric soils, and wetland hydrology.
WWM	Watershed Management Measures.
WWMM	Waterways Management Model. A computer program used by the District to inventory the creeks and rivers in the county within District jurisdiction, calculate flood damages for under one percent capacity creeks, and prioritize river and creek reaches for study and modification.
WWTP	Wastewater treatment plant

APPENDIX B

PERSONS TO CONTACT FOR MORE INFORMATION

About This Report

Scott Wilson, Project Engineer, Adobe Creek Watershed Planning Study
Santa Clara Valley Water District
(408) 927-0710

About Flood Insurance

Randy Talley, Supervising Engineer
Santa Clara Valley Water District
(408) 927-0710

About Environmental Considerations

Vickie Germany, Environmental Planner
Santa Clara Valley Water District
(408) 927-0710

About Creek Maintenance

José L. Ortiz, Supervising Engineer
Santa Clara Valley Water District
(408) 265-2600

About Land Acquisition/Dedication

Vincent Lico, Supervising Real Estate Agent
Santa Clara Valley Water District
(408) 265-2600

About Detailed Design and Construction

David Hook, Supervising Engineer
Santa Clara Valley Water District
(408) 927-0710

About Local Storm Drains

Joe Teresi, Senior Civil Engineer
City of Palo Alto
(415) 329-2129

Bruce Bane, Director of Public Works
City of Los Altos
(415) 948-1491

Jeff Peterson, Town Manager/Town Engineer
Town of Los Altos Hills
(415) 941-7222

APPENDIX C

ORGANIZATIONS AND PERSONS CONTACTED DURING PREPARATION OF THIS REPORT

Mr. Joe Teresi
Senior Engineer
City of Palo Alto

California Water Service
Los Altos, CA

Purrisima Hills Water District
Los Altos Hills, CA

Mr. Lawrence Berg
Pacific Gas & Electric
Cupertino, CA

Mr. Christopher Salkeld
Cable Co-Op
Palo Alto, CA

Ms. Judith Steiner
Executive Director
Hidden Villa Trust

Sun Country Cable
Pleasanton, CA

Mr. Steve Petrocchi
Pacific Bell
Redwood City, CA

Mr. Bruce Bane
Public Works Director
City of Los Altos

Mr. John Schulze
Director of Operations
Foothill-De Anza Community
College District
Los Altos Hills, CA

Mr. Daryl Henderson
United Cable Television of Cupertino
Cupertino, CA

Mr. Jeff Peterson
Town Manager/Town Engineer
Town of Los Altos Hills

APPENDIX D

BIBLIOGRAPHY

Archeological Resource Management. *Cultural Resource Evaluation of the Adobe Creek Project in the County of Santa Clara*, April 1994.

California Department of Fish and Game. *California Salmonid Stream Habitat Restoration Manual*, August 1991.

Federal Emergency Management Agency. *Flood Insurance Study, Town of Los Altos Hills, California, Santa Clara County*, May 1979.

————. *Flood Insurance Study, City of Palo Alto, California, Santa Clara County*, August 1979.

————. *Flood Insurance Study, City of Los Altos, California, Santa Clara County*, January 1980.

Gray, Donald H. "Approaches to Slope Protection and Erosion Control," *Erosion Control*, October 1994, 32-39.

Habitat Restoration Group, Philip Williams and Associates, and 2M Associates. *Adobe Creek Restoration Plan*, May 1989.

Habitat Restoration Group. *Biological Resources of the Upper Adobe Creek Study Area,* November 1989.

H. T. Harvey and Associates. *Identification of Waters of the United States, Upper Adobe Creek, Santa Clara County, California*, December 1993.

————. *Adobe Creek Planning Study Impact and Mitigation Analysis*, September 1994.

————. *Draft Adobe Creek Environmental Impact Report*, August 1996.

————. *Study of the Use of Revegetated Gabions by Breeding Birds*, June 1998.

Leopold, Luna B. *A View of the River*, 1994.

Los Altos, City of. *Los Altos General Plan 1987-2000*, October 1987.

Santa Clara County Flood Control and Water District. *Adobe Creek Improvement Project Aerial Photographs*, February 1956.

————. *Reconnaissance Report on Floods of January 21-24*, 1967.

————. *Report on Proposed Improvements on Adobe Creek (El Monte Road to Tepa Way)*, August 1973.

Santa Clara County Planning Commission. *Flood Problems in Santa Clara County*, October 1952.

Santa Clara Valley Water District. *Adobe Creek Flood Control Planning Study, El Camino Real to the Headwaters*, February 1975.

————. *Flood Emergency Report*, January 13 to January 17, 1978.

————. *Hydrology Documentation for the Northwest Flood Control Zone*, July 1978.

————. *Flood Emergency Report*, February 13 to February 22, 1980.

————. *Report on Flooding and Flood Related Damages, Santa Clara County*, January 1 to April 30, 1982.

————. *Report on Flooding and Flood Related Damages, Santa Clara County*, January 1 to April 30, 1983.

————. *Adobe Creek Planning Study (Palo Alto Flood Basin to El Camino Real)*, June 1985.

————. *Adobe Creek Hydrology as Part of the Hydrology of Adobe, Matadero and Barron Creeks*, April 1989, Edited January 1994. (Included as Appendix I.)

————. *Adobe Creek Final Environmental Impact Report for Channel Improvements (Charleston Road to El Camino Real)*, April 1990.

————. *Fuel Leak Site Activity Report*, April 1993.

————. *Santa Clara Valley Nonpoint Source Control Program Proposed Storm Water Management Plan for NPDES Permit 1995-2000*, June 30, 1995.

————. *Stream Care Guide for Santa Clara County*, November 1994.

————. *Report on Flooding and Flood Related Damages, Santa Clara County*, January 3 to March 11, 1995.

————. *Report on Flooding and Flood Related Damages in Santa Clara County*, February 2 to 9, 1998.

Stormwater Quality Task Force. *California Storm Water Best Management Practice Handbooks—Construction Activity Best Management Practice Handbook*, March 1993.

Terratech, Inc. *Phase I Hazardous Materials Assessment, Upper Adobe Creek, El Camino Real to Moody Road*, January 1994.

————. *Adobe Creek Watershed Planning Study Creekbed Sediment Testing and Analysis, Santa Clara County, California*, December 1994.

Thompson and West. *Historical Atlas of Santa Clara County, California*, 1973.

United States Army Corps of Engineers, San Francisco District. *Report on Floods of December 1955 and January 1956 in Northern California Coastal Streams*, June 1956.

United States Environmental Protection Agency. *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, January 1993.

Woodward-Clyde Consultants. *Santa Clara Valley Nonpoint Source Study—Volume 1: Loads Assessment Report*, February 1991.

APPENDIX E

NATIONAL FLOOD INSURANCE PROGRAM

Floods are the most serious natural hazard facing the American people. Of the natural disasters that occur in this country, 90 percent are flood-related. The U.S. Water Resources Council (WRC) estimated that between 1936 and 1975 the federal government spent more than $13 billion for dams and other flood control structures such as levees, floodwalls, and channel work. At the same time, there was also a substantial, but unquantified, investment in nonfederal flood control measures (WRC, 1977). Despite that investment, flood loses continue to increase. The National Weather Service estimates that during the years from 1916 to 1989, nationwide flood damages exceeded $1.5 billion per year. This yearly average does not include the damage from the floods along the Mississippi and Missouri Rivers in 1993. These floods caused approximately $10 billion in damages.

The National Flood Insurance Program (NFIP) was created by the Congress in 1968 to mitigate the effect on communities and individuals of property damage due to floods and flood-related hazards. The NFIP enabled property owners to purchase flood insurance at a reasonable rate. Such insurance is designed to reduce the escalating costs of property damage caused by floods and is generally unavailable from private sector insurance companies. The program is based on an agreement between local communities and the federal government that, if a community will implement programs to reduce future flood risks, the federal government will make flood insurance available within the community at subsidized rates as a financial protection against flood losses.

The NFIP has two objectives: (1) to make flood insurance available for existing structures in floodprone areas and (2) to require that local governments regulate location and construction of new buildings to minimize future flood losses. Extensive public subsidies are required to make flood insurance affordable for owners of existing structures. This cost is offset by reduction in future disaster relief appropriations, which would result from requiring new construction in flood prone areas to be less susceptible to flood damage. Community participation in NFIP and individual purchase of insurance were both voluntary, based on the 1968 act. The Flood Disaster Protection Act of 1973 made flood insurance mandatory when "federally-related financing" was involved in acquiring or developing property located in a defined flood hazard area. Federally-related financing includes direct federal grants and loans and mortgage loans by financial institutions insured or regulated by federal agencies such as the Federal Reserve Bank or the Federal Deposit Insurance Corporation. Before property owners can obtain flood insurance, the local community (city or county) must join the Program. Joining in the NFIP requires that those communities with designated flood hazard areas adopt and enforce floodplain management measures that will diminish the impact of future floods.

Once a community has joined the Program, property owners throughout the community can purchase subsidized insurance to cover structural loses up to: $185,000 for a single-family dwelling; $250,000 for a multiunit dwelling; $200,000 for nonresidential structures; and $250,000 for small businesses. In addition, subsidized insurance can be purchased to cover building contents losses up to: $60,000 for residential units; $200,000 for nonresidential units; and $300,000 for small businesses. The table on the next page itemizes the insurance available and the rates.

TABLE E1
Amounts of Flood Insurance Available and Rates

Building	Structural Insurance				Contents Insurance			
	Basic		Additional		Basic		Additional	
Category	Limit	Rate	Limit	Rate	Limit	Rate	Limit	Rate
Single family	50,000	0.68	135,000	0.18	15,000	0.79	45,000	0.32
Multifamily	50,000	0.68	200,000	0.18	15,000	0.79	45,000	0.32
Nonresidential	135,000	0.79	65,000	0.32	115,000	1.58	85,000	0.27
Small Business	135,000	0.79	115,000	0.32	115,000	1.58	185,000	0.27

- Insurance limits are in dollars
- Rates are in units of dollars per $100 of value
- Limits and rates are from November 1995

Using the rates in Table E1, the minimum cost (single family residence) for structural insurance is $340 ($0.68 x 500). The minimum contents cost is $118.50 ($0.79 x 150). These two amounts added together yield a minimum total insurance cost of $458.50 per year.

APPENDIX F

DETAILED COST ESTIMATE

Adobe Creek
El Camino Real to Upstream Moody Road
Cost Estimate Summary

Reach	Construction Cost	Mitigation Required (Acres)	Mitigation Revegatation Cost	Mitigation R/W Cost	Total Cost	Number of Erosion Sites	Number of Vortex Rock Weirs	Annualized First Cost[1]	Annual Maintenance Cost	Total Annual Cost
1	$1,755,000	0.21	$42,000	$105,000	$1,902,000	5	1	$155,400	$5,500	$160,900
2	$106,000	0.14	$28,000	$70,000	$204,000	4	0	$16,700	$6,700	$23,400
3	$96,000	0.06	$12,000	$30,000	$138,000	6	5	$11,300	$10,200	$21,500
4	$41,000	0.01	$2,000	$5,000	$48,000	1	1	$3,900	$2,200	$6,100
5	$2,319,000	0.71	$142,000	$180,000	$2,641,000	1	0	$215,800	$5,700	$221,500
6	$0	0	$0	$0	$0	0	0	$0	$4,500	$4,500
7	$493,000	0.06	$12,000	$30,000	$535,000	0	0	$43,700	$6,600	$50,300
8	$10,000	0.01	$2,000	$5,000	$17,000	2	0	$1,400	$5,700	$7,100
9	$514,000	0.07	$14,000	$35,000	$563,000	0	0	$46,000	$2,800	$48,800
10	$0	0	$0	$0	$0	0	0	$0	$3,900	$3,900
11	$1,802,000	0.97	$194,000	$160,000	$2,156,000	0	0	$176,100	$4,500	$180,600
12	$91,000	0.04	$8,000	$20,000	$119,000	1	2	$9,700	$3,500	$13,200
13	$30,000	0.05	$10,000	$25,000	$65,000	0	0	$5,300	$2,200	$7,500
14	$0	0	$0	$0	$0	0	0	$0	$3,200	$3,200
15	$0	0	$0	$0	$0	0	0	$0	$5,100	$5,100
16	$0	0	$0	$0	$0	0	0	$0	$8,500	$8,500
Maintenance Plan		0.29	$58,000	$145,000	$203,000	20	9			
Sum	**$7,257,000**	**2.62**	**$524,000**	**$810,000**	**$8,591,000**	**40**	**18**	**$685,300**	**$80,800**	**$766,100**

---

[1] Annual costs are calculated using an 8 percent discount rate over a 50-year period.

Adobe Creek
Reach 1: El Camino Real to Hetch Hechy
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
EL CAMINO REAL CULVERT REPLACEMENT				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.12	$660
Channel Construction				
Concrete Transition Lining	$465	C.Y.	55	$25,575
Gabion Slope Protection (1.5' x 3')	$160	C.Y.	540	$86,400
ACB Ramp/Invert Lining	$7	S.F.	1155	$8,085
Rock Invert Lining	$50	C.Y.	355	$17,750
Cutoff Wall	$420	C.Y.	10	$4,200
Excavation	$10	C.Y.	600	$6,000
Fill	$15	C.Y.	150	$2,250
Concrete Removal	$100	C.Y.	410	$41,000
Outfalls (18" CMP)	$3,000	E.A.	1	$3,000
Outfalls (60" RCP)	$5,000	E.A.	1	$5,000
Culvert Replacement				
Culvert Removal	$100	C.Y.	235	$23,500
Culvert Construction	$465	C.Y.	555	$258,075
Sheet Piling	$15	S.F.	6630	$99,450
Excavation	$10	C.Y.	2670	$26,700
Fill	$15	C.Y.	2460	$36,900
Utility Relocation	$40,000	E.A.	7	$280,000
Traffic Control	$150,000	L.S.	1	$150,000
Roadway Replacement				
Remove A/C Pavement	$2	S.F.	5205	$10,410
Remove Curb & Gutter	$2	L.F.	210	$420
Remove Sidewalk	$2	S.F.	835	$1,670
Remove Median	$2	S.F.	210	$420
A/C Pavement	$5	S.F.	5205	$26,025
Curb & Gutter	$8	L.F.	210	$1,680
Sidewalk	$8	S.F.	835	$6,680
Median	$8	S.F.	210	$1,680
Miscellaneous				
42" Black-Vinyl CL Fence	$10	L.F.	400	$4,000
Construction Right-Of-Way				$0
Subtotal - Culvert Replacement				**$1,127,530**

Adobe Creek
Reach 1: El Camino Real to Hetch Hechy
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
EROSION REPAIR SITES				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.1	$550
Channel Bank Modifications (5 sites)				
Rock Slope Protection	$50	C.Y.	484	$24,200
Excavation	$10	C.Y.	427	$4,270
Fill	$15	C.Y.	146	$2,190
Tree Removal (12" to 17")	$1,600	EA.	5	$8,000
Channel Bottom Modifications (1 site)				
Rock Slope Protection (4-5 feet diameter)	$80	TON	27	$2,160
Excavation	$10	C.Y.	45	$450
Fill	$15	C.Y.	36	$540
Construction Right-Of-Way				$0
Subtotal - Erosion Repair				**$42,360**
SUBTOTAL (Culvert and Erosion)				**$1,169,890**
Mobilization (10%)				$116,989
Construction Contingencies (10%)				$116,989
TOTAL CONSTRUCTION COST				**$1,403,868**
Design (10%)				$140,387
Geotechnical (5%)				$70,193
Inspection (10%)				$140,387
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.21	$42,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.21	$105,000
MITIGATION COSTS				**$147,000**
REACH 1: TOTAL FIRST COST				**$1,902,000**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$155,400**
ANNUAL MAINTENANCE				**$5,500**
TOTAL ANNUAL COST				**$160,900**

Adobe Creek
Reach 2: Hetch Hechy to Upstream of Alta Mesa Cemetary
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
MAINTENANCE ACCESS RAMP				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.07	$385
Access Ramp Surfacing				
6" Crushed Rock	$5	S.Y.	333	$1,665
Construction Right-Of-Way				$0
EROSION REPAIR SITES				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.12	$660
Channel Bank Modifications (4 sites)				
Rock Slope Protection	$50	C.Y.	719	$35,950
Sacked Concrete Slope Protection (SCSP)	$150	S.Y.	60	$9,000
Cut-Off Wall	$420	C.Y.	6.3	$2,646
Excavation	$10	C.Y.	375	$3,750
Fill	$15	C.Y.	479	$7,185
Tree Removal (12" to 17")	$267	EA.	37	$9,879
Construction Right-Of-Way				$0
SUBTOTAL				$70,735
Mobilization (10%)				$7,074
Construction Contingencies (10%)				$7,074
TOTAL CONSTRUCTION COST				**$84,882**
Design (10%)				$8,488
Geotechnical (5%)				$4,244
Inspection (10%)				$8,488
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.14	$28,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.14	$70,000
MITIGATION COSTS				**$98,000**
REACH 2: TOTAL FIRST COST				$204,000

Adobe Creek
Reach 2: Hetch Hechy to Upstream of Alta Mesa Cemetary
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
ANNUALIZED FIRST COST (8%, 50-Year Life)				$16,700
ANNUAL MAINTENANCE				$6,700
TOTAL ANNUAL COST				$23,400

Adobe Creek
Reach 3: Upstream of Alta Mesa Cemetary to Yerba Buena Avenue
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
EROSION REPAIR SITES				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.2	$1,100
Channel Bank Modifications (4 sites)				
Rock Slope Protection	$50	C.Y.	418	$20,900
Gabion Slope Protection (1.5' x 3')	$160	S.Y.	21	$3,360
Cut-Off Wall	$420	C.Y.	4.1	$1,722
Excavation	$10	C.Y.	309	$3,090
Fill	$15	C.Y.	239	$3,585
Tree Removal (12" to 17")	$1,600	EA.	9	$14,400
Channel Bottom Modifications (4 sites)				
Rock Slope Protection (4-5 feet diameter)	$80	TON	135	$10,800
Excavation	$10	C.Y.	225	$2,250
Fill	$15	C.Y.	180	$2,700
Construction Right-Of-Way				$0
SUBTOTAL				**$63,907**
Mobilization (10%)				$6,391
Construction Contingencies (10%)				$6,391
TOTAL CONSTRUCTION COST				**$76,688**
Design (10%)				$7,669
Geotechnical (5%)				$3,834
Inspection (10%)				$7,669
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.06	$12,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.06	$30,000
MITIGATION COSTS				**$42,000**
REACH 3: TOTAL FIRST COST				$138,000
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$11,300**
ANNUAL MAINTENANCE				**$10,200**
TOTAL ANNUAL COST				**$21,500**

Adobe Creek
Reach 4: Yerba Buena Avenue to Foothill Expressway
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
EROSION REPAIR SITES				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.01	$55
Channel Bank Modifications (1 site)				
Geocell Slope Protection	$40	S.F.	560	$22,400
Tree Removal (12" to 17")	$1,600	EA.	1	$1,600
Channel Bottom Modifications (1 site)				
Rock Slope Protection (4-5 feet diameter)	$80	TON	27	$2,160
Excavation	$10	C.Y.	45	$450
Fill	$15	C.Y.	36	$540
Construction Right-Of-Way				$0
SUBTOTAL				**$27,205**
Mobilization (10%)				$2,721
Construction Contingencies (10%)				$2,721
TOTAL CONSTRUCTION COST				**$32,646**
Design (10%)				$3,265
Geotechnical (5%)				$1,632
Inspection (10%)				$3,265
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.01	$2,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.01	$5,000
MITIGATION COSTS				**$7,000**
REACH 4: TOTAL FIRST COST				**$48,000**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$3,900**
ANNUAL MAINTENANCE				**$2,200**
TOTAL ANNUAL COST				**$6,100**

Adobe Creek
Reach 5: Foothill Expressway to West Edith Avenue
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
ADDITIONAL CULVERT AT FOOTHILL EXPRESSWAY				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.2	$1,100
Culvert Construction				
Earth Excavation	$10	C.Y.	4925	$49,250
Concrete Removal	$100	C.Y.	44	$4,400
SCSP Removal	$100	C.Y.	52	$5,200
Fill	$15	C.Y.	3100	$46,500
Sheet Piling	$15	C.Y.	3000	$45,000
Concrete (Culvert Construction)	$465	C.Y.	430	$199,950
Utility Relocation	$40,000	EA.	0	$0
Traffic Control	$150,500	L.S.	1	$150,500
Tree Removal (12" to 17")	$1,600	EA.	5	$8,000
Transition Structures				
Rock Riprap	$50	C.Y.	242	$12,100
Gabions	$160	C.Y.	185	$29,600
ACB Channel Bottom	$420	C.Y.	66	$27,720
Concrete (Skewed Transition)	$465	C.Y.	17	$7,905
Roadway Replacement				
Remove A/C Pavement	$2	S.F.	3200	$6,400
Remove Curb & Gutter	$2	L.F.	90	$180
Remove Median	$2	S.F.	480	$960
A/C Pavement	$5	S.F.	3200	$16,000
Curb & Gutter	$8	L.F.	90	$720
Median	$8	S.F.	480	$3,840
Miscellaneous				
42" Black-Vinyl CL Fence	$10	L.F.	265	$2,650
Construction Right-Of-Way				$0
Subtotal - Culvert Addition				**$617,975**

Adobe Creek
Reach 5: Foothill Expressway to West Edith Avenue
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
FLOODBENCH/GABION LOW FLOW CHANNEL				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	1.6	$8,800
Ramp/Channel Modifications				
Concrete Transition/Drop structures	$465	C.Y.	171	$79,515
Gabion Transition/Slope Protection (1.5' x 3')	$160	C.Y.	1267	$202,720
Rock Slope/Invert Lining/Drop Structures	$50	C.Y.	2320	$116,000
ACB Ramp Surfacing	$7	S.F.	600	$4,200
Cutoff Wall	$420	C.Y.	168	$70,560
Excavation	$10	C.Y.	15670	$156,700
Fill	$15	C.Y.	274	$4,110
Concrete Transition Removal	$100	C.Y.	36	$3,600
Channel Wall Removal	$4	L.F.	1330	$5,320
Tree Removal (12" to 17")	$1,600	EA.	45	$72,000
Tree Removal (18"+)	$4,000	EA.	16	$64,000
Outfalls (15" RCP, 15" CMP)	$3,000	EA.	4	$12,000
Utility Relocation	$40,000	EA.	1	$40,000
Bridge Modification				
Concrete Channel Bottom (W. Edith Ave.)	$465	C.Y.	39	$18,135
Excavation	$10	C.Y.	223	$2,230
Miscellaneous				
42" Black-Vinyl CL Fence	$10	L.F.	1325	$13,250
Gate	$800	EA.	1	$800
Demolition				
Remove Tennis Court (colored surfacing & net)	$2	S.F.	6555	$13,110
Remove Fence (surrounding tennis court)	$2	L.F.	340	$680
Remove Pool & Concrete Deck	$100	C.Y.	55	$5,500
Remove AC Roadway	$2	S.F.	5400	$10,800
Remove Pool House	$1,300	EA.	1	$1,300
Destruction of Well in Right-of-Way	$3,600	EA.	1	$3,600
Construction Right-Of-Way				$0
Subtotal - Floodbench				**$908,930**

Adobe Creek
Reach 5: Foothill Expressway to West Edith Avenue
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
EROSION REPAIR SITES				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.01	$55
Channel Bank Modifications (1 site)				
Sacked Concrete Slope Protection (SCSP)	$150	S.Y.	75	$11,250
Cut-Off Wall	$420	C.Y.	7.9	$3,318
Excavation	$10	C.Y.	10	$100
Fill	$15	C.Y.	38	$570
Tree Removal (12" to 17")	$267	EA.	15	$4,005
Construction Right-Of-Way				$0
Subtotal - Erosion Repairs				$19,298
SUBTOTAL (Culvert, Floodbench & Erosion Repair)				**$1,546,203**
Mobilization (10%)				$154,620
Construction Contingencies (10%)				$154,620
TOTAL CONSTRUCTION COST				**$1,855,444**
Design (10%)				$185,544
Geotechnical (5%)				$92,772
Inspection (10%)				$185,544
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0.35	$70,000
Revegetation (off-site)	$200,000	ACRE	0.36	$72,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.36	$180,000
MITIGATION COSTS				**$322,000**
REACH 5: TOTAL FIRST COST				**$2,641,000**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$215,800**
ANNUAL MAINTENANCE				**$5,700**
TOTAL ANNUAL COST				**$221,500**

Adobe Creek
Reach 6: West Edith Avenue to Burke Road
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
NO CAPITAL IMPROVEMENTS				
NO EROSION REPAIR SITES				
SUBTOTAL				**$0**
Mobilization (10%)				$0
Construction Contingencies (10%)				$0
TOTAL CONSTRUCTION COST				**$0**
Design (10%)				$0
Geotechnical (5%)				$0
Inspection (10%)				$0
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0	$0
Revegetation right-of-way (off-site)	$500,000	ACRE	0	$0
MITIGATION COSTS				**$0**
REACH 6: TOTAL FIRST COST				**$0**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$0**
ANNUAL MAINTENANCE				**$4,500**
TOTAL ANNUAL COST				**$4,500**

Adobe Creek
Reach 7: Burke Road to Manresa Way
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
BURKE ROAD BRIDGE REPLACEMENT				
Ramp/Channel Modifications				
Gabion Transition Lining	$160	C.Y.	40	$6,400
Concrete Invert Lining	$465	C.Y.	0	$0
Cutoff Wall	$420	C.Y.	6	$2,520
Excavation	$10	C.Y.	110	$1,100
Fill	$15	C.Y.	45	$675
Bridge Replacement				
Bridge Removal	$100	C.Y.	35	$3,500
Culvert Construction	$465	C.Y.	205	$95,325
Sheet Piling	$15	S.F.	1075	$16,125
Excavation	$10	C.Y.	820	$8,200
Fill	$15	C.Y.	360	$5,400
Utility Relocation	$40,000	EA.	3	$120,000
Traffic Control	$50,000	L.S.	1	$50,000
Roadway Replacement				
Remove A/C Pavement	$2	S.F.	1870	$3,740
Remove Curb & Gutter	$2	L.F.	115	$230
Remove Sidewalk	$2	S.F.	230	$460
A/C Pavement	$5	S.F.	2300	$11,500
Curb & Gutter	$8	L.F.	115	$920
Sidewalk	$8	S.F.	230	$1,840
Miscellaneous				
42" Black-Vinyl CL Fence	$10	L.F.	60	$600
Construction Right-Of-Way				$0
SUBTOTAL				**$328,535**
Mobilization (10%)				$32,854
Construction Contingencies (10%)				$32,854
TOTAL CONSTRUCTION COST				**$394,242**

Adobe Creek
Reach 7: Burke Road to Manresa Way
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
Design (10%)				$39,424
Geotechnical (5%)				$19,712
Inspection (10%)				$39,424
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.06	$12,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.06	$30,000
MITIGATION COSTS				**$42,000**
REACH 7: TOTAL FIRST COST				**$535,000**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$43,700**
ANNUAL MAINTENANCE				**$6,600**
TOTAL ANNUAL COST				**$50,300**

Adobe Creek
Reach 8: Manresa Way to O'Keefe Lane
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
EROSION REPAIR SITES				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.02	$110
Channel Bank Modifications (2 sites)				
Rock Slope Protection	$50	C.Y.	100	$5,000
Excavation	$10	C.Y.	83	$830
Fill	$15	C.Y.	39	$585
Tree Removal (12" to 17")	$267	EA.	0	$0
Construction Right-Of-Way				$0
SUBTOTAL				**$6,525**
Mobilization (10%)				$653
Construction Contingencies (10%)				$653
TOTAL CONSTRUCTION COST				**$7,830**
Design (10%)				$783
Geotechnical (5%)				$392
Inspection (10%)				$783
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.01	$2,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.01	$5,000
MITIGATION COSTS				**$7,000**
REACH 8: TOTAL FIRST COST				$17,000
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$1,400**
ANNUAL MAINTENANCE				**$5,700**
TOTAL ANNUAL COST				**$7,100**

Adobe Creek
Reach 9: O'Keefe Lane to Interstate 280
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
O'KEEFE LANE CULVERT REPLACEMENT				
Ramp/Channel Modifications				
Gabion Transition Lining	$160	C.Y.	105	$16,800
ACB Drop Structure Surfacing	$7	S.F.	560	$3,920
Rock Invert Lining	$50	C.Y.	170	$8,500
Cutoff Wall	$420	C.Y.	5	$2,100
Excavation	$10	C.Y.	660	$6,600
Culvert Replacement				
Bridge Removal	$100	C.Y.	45	$4,500
Culvert Construction	$465	C.Y.	110	$51,150
Sheet Piling	$15	S.F.	1350	$20,250
Excavation	$10	C.Y.	500	$5,000
Fill	$15	C.Y.	250	$3,750
Utility Relocation	$40,000	EA.	4	$160,000
Traffic Control	$50,000	L.S.	1	$50,000
Roadway Replacement				
Remove A/C Pavement	$2	S.F.	1215	$2,430
Remove Curb & Gutter	$2	L.F.	55	$110
A/C Pavement	$5	S.F.	1215	$6,075
Curb & Gutter	$8	L.F.	55	$440
Miscellaneous				
42" Black-Vinyl CL Fence	$10	L.F.	80	$800
Construction Right-Of-Way				$0
SUBTOTAL				$342,425
Mobilization (10%)				$34,243
Construction Contingencies (10%)				$34,243
TOTAL CONSTRUCTION COST				**$410,910**

Adobe Creek
Reach 9: O'Keefe Lane to Interstate 280
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
Design (10%)				$41,091
Geotechnical (5%)				$20,546
Inspection (10%)				$41,091
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.07	$14,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.07	$35,000
MITIGATION COSTS				**$49,000**
REACH 9: TOTAL FIRST COST				$563,000
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$46,000**
ANNUAL MAINTENANCE				**$2,800**
TOTAL ANNUAL COST				**$48,800**

Adobe Creek
Reach 10: Interstate 280 to Foothill College Entrance
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
NO CAPITAL IMPROVEMENTS				
NO EROSION REPAIR SITES				
SUBTOTAL				**$0**
Mobilization (10%)				$0
Construction Contingencies (10%)				$0
TOTAL CONSTRUCTION COST				**$0**
Design (10%)				$0
Geotechnical (5%)				$0
Inspection (10%)				$0
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0	$0
Revegetation right-of-way (off-site)	$500,000	ACRE	0	$0
MITIGATION COSTS				**$0**
REACH 10: TOTAL COST				$0
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$0**
ANNUAL MAINTENANCE				**$3,900**
TOTAL ANNUAL COST				**$3,900**

Adobe Creek
Reach 11: Foothill College Entrance to El Monte Road
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
GABION/ARMORED CHANNEL WITH HIGH FLOW BENCHES				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	1.7	$9,350
Ramp/Channel Modifications				
Gabion Slope Protection	$160	C.Y.	1838	$294,080
Rock Riprap Channel Bottom	$50	C.Y.	1800	$90,000
Concrete Cutoff Wall	$465	C.Y.	405.2	$188,418
Excavation	$10	C.Y.	15100	$151,000
Fill	$15	C.Y.	635	$9,525
Concrete Drops	$465	C.Y.	164	$76,260
Concrete Removal (Bypass Outlet)	$100	C.Y.	30.8	$3,080
Concrete Transition (Bypass Outlet)	$465	C.Y.	62.5	$29,063
Sheet Piling	$20	S.F.	852	$17,040
ACB Ramp Surfacing	$7	S.F.	870	$6,090
Tree Removal (10" to 17")	$1,600	EA.	56	$89,600
Tree Removal (18" to 30")	$4,000	EA.	3	$12,000
Miscellaneous				
42" Black-Vinyl CL Fence	$10	L.F.	770	$7,700
Gate	$800	EA.	1	$800
Parking Lot Modifications				
Remove A/C Pavement	$2	S.F.	27120	$54,240
Remove Guardrail	$3	L.F.	1239	$3,717
Guardrail	$9	L.F.	1239	$11,151
A/C Pavement (New Parking Lot, Foothill College)	$5	S.F.	29620	$148,100
Construction Right-Of-Way				$0
SUBTOTAL				**$1,201,214**
Mobilization (10%)				$120,121
Construction Contingencies (10%)				$120,121
TOTAL CONSTRUCTION COST				**$1,441,456**

Adobe Creek
Reach 11: Foothill College Entrance to El Monte Road
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
Design (10%)				$144,146
Geotechnical (5%)				$72,073
Inspection (10%)				$144,146
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0.65	$130,000
Revegetation (off-site)	$200,000	ACRE	0.32	$64,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.32	$160,000
MITIGATION COSTS				**$354,000**
REACH 11: TOTAL FIRST COST				**$2,156,000**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$176,100**
ANNUAL MAINTENANCE				**$4,500**
TOTAL ANNUAL COST				**$180,600**

Adobe Creek
Reach 12: El Monte Road to Tepa Way
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
EROSION REPAIR SITES				
Site Preparation				
Clearing and Grubbing	$5,500	ACRE	0.03	$165
Channel Bank Modifications (1 site, both banks)				
Geocell Slope Protection	$40	S.F.	1342	$53,680
Tree Removal (12" to 17")	$267	EA.	1	$267
Channel Bottom Modifications (2 sites)				
Rock Slope Protection (4-5 feet diameter)	$80	TON	54	$4,320
Excavation	$10	C.Y.	90	$900
Fill	$15	C.Y.	72	$1,080
Construction Right-Of-Way				$0
SUBTOTAL				**$60,412**
Mobilization (10%)				$6,041
Construction Contingencies (10%)				$6,041
TOTAL CONSTRUCTION COST				$72,494
Design (10%)				$7,249
Geotechnical (5%)				$3,625
Inspection (10%)				$7,249
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.04	$8,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.04	$20,000
MITIGATION COSTS				**$28,000**
REACH 12: TOTAL FIRST COST				**$119,000**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$9,700**
ANNUAL MAINTENANCE				**$3,500**
TOTAL ANNUAL COST				**$13,200**

Adobe Creek
Reach 13: Tepa Way to Rhus Ridge Road
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
NO EROSION REPAIR SITES				
BYPASS ENTRANCE STRUCTURE MODIFICATION				
SUBTOTAL				**$20,000**
Mobilization (10%)				$2,000
Construction Contingencies (10%)				$2,000
TOTAL CONSTRUCTION COST				**$24,000**
Design (10%)				$2,400
Geotechnical (5%)				$1,200
Inspection (10%)				$2,400
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0.05	$10,000
Revegetation right-of-way (off-site)	$500,000	ACRE	0.05	$25,000
MITIGATION COSTS				**$35,000**
REACH 13: TOTAL FIRST COST				$65,000
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$5,300**
ANNUAL MAINTENANCE				**$2,200**
TOTAL ANNUAL COST				**$7,500**

Adobe Creek
Reach 14: Rhus Ridge Road to Francemont Avenue
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
NO CAPITAL IMPROVEMENTS				
NO EROSION REPAIR SITES				
SUBTOTAL				**$0**
Mobilization (10%)				$0
Construction Contingencies (10%)				$0
TOTAL CONSTRUCTION COST				**$0**
Design (10%)				$0
Geotechnical (5%)				$0
Inspection (10%)				$0
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0	$0
Revegetation right-of-way (off-site)	$500,000	ACRE	0	$0
MITIGATION COSTS				**$0**
REACH 14: TOTAL FIRST COST				$0
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$0**
ANNUAL MAINTENANCE				**$3,200**
TOTAL ANNUAL COST				**$3,200**

Adobe Creek
Reach 15: Francemont Avenue to Murietta Lane
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
NO CAPITAL IMPROVEMENTS				
NO EROSION REPAIR SITES				
SUBTOTAL				**$0**
Mobilization (10%)				$0
Construction Contingencies (10%)				$0
TOTAL CONSTRUCTION COST				**$0**
Design (10%)				$0
Geotechnical (5%)				$0
Inspection (10%)				$0
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0	$0
Revegetation right-of-way (off-site)	$500,000	ACRE	0	$0
MITIGATION COSTS				**$0**
REACH 15: TOTAL FIRST COST				**$0**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$0**
ANNUAL MAINTENANCE				**$5,100**
TOTAL ANNUAL COST				**$5,100**

Adobe Creek
Reach 16: Murietta Lane to Upstream Moody Road
Cost Estimate Summary

Item	Unit Cost	Unit	Quantity	Amount
NO CAPITAL IMPROVEMENTS				
NO EROSION REPAIR SITES				
SUBTOTAL				**$0**
Mobilization (10%)				$0
Construction Contingencies (10%)				$0
TOTAL CONSTRUCTION COST				**$0**
Design (10%)				$0
Geotechnical (5%)				$0
Inspection (10%)				$0
Mitigation				
Revegetation (on-site)	$200,000	ACRE	0	$0
Revegetation (off-site)	$200,000	ACRE	0	$0
Revegetation right-of-way (off-site)	$500,000	ACRE	0	$0
MITIGATION COSTS				**$0**
REACH 16: TOTAL FIRST COST				**$0**
ANNUALIZED FIRST COST (8%, 50-Year Life)				**$0**
ANNUAL MAINTENANCE				**$8,500**
TOTAL ANNUAL COST				**$8,500**

APPENDIX G

ADOBE CREEK WATERSHED REAL ESTATE PROGRAM

A continuous, accessible right of way corridor is essential to optimize the proposed Adobe Creek Maintenance Program's success.

LIMITED EASEMENT DEED (EROSION AND VEGETATION CONTROL)

The District may perform maintenance activities described earlier in this report only in areas where it has existing fee title or appropriate easement rights of way. For properties where only erosion and/or vegetation control is needed, and the District has no right of way, the District will prepare a Limited Maintenance Easement Deed (LED). Owners of these properties will be requested to dedicate a limited easement to the District so that the District will have the necessary legal authority to conduct its proposed maintenance activities on a specific portion of the owner's property.

In areas where a property owner elects not to dedicate a limited easement, the District may not install or maintain bank protection and/or stream bed stabilizers as it will have no legal authority to do so. Property owners who do not dedicate a limited easement will continue to bear all creek maintenance responsibilities and liabilities associated with their property.

The extent of property needed for each limited easement will be determined on a case by case basis by District engineers. Each limited easement will include a legal description and plat (map of the easement area on an individual parcel where a limited easement is needed). Legal descriptions and plats will be prepared by a California Licensed Land Surveyor at District expense. Each property owner will be requested to dedicate a limited easement by returning a signed and notarized LED to the District. A notary public will likely charge a nominal fee for this service.

Property owners granting limited easements will incur no engineering, title search, deed preparation or recording costs nor will they be compensated as a result of the dedication. After the LED is recorded, a notation of it should appear on any subsequent search on an owner's parcel.

Generally, each LED will contain the terms and conditions shown in Exhibit A attached hereto. If special circumstances on a particular property warrant (such as lack of access), an appropriate modification to the proposed language may be made at the District's discretion.

In cases where an existing easement on a property is inaccessible, does not allow the maintenance activities proposed in this report to be carried out, or if the area of an existing easement area on a property is insufficient, the District will identify an appropriate limited easement configuration and request that the area be dedicated to the District.

The number of limited easements needed for the proposed maintenance corridor may necessitate that the limited easement requests be phased in three separate groups: Reaches 1 through 4 (between El Camino Real and Foothill Expressway), Reaches 5 through 8 (between Foothill Expressway and O'Keefe Lane) and Reaches 9 through 16 (between O'Keefe Lane and the end of the project reach) at approximate (6 month) intervals. Each group of property owners will be requested to complete the limited easement dedication within an approximate 90 day (three month) time frame from mailing of the LED dedication request.

The proposed maintenance activities will be provided contingent upon availability of funds allocated to the Northwest Zone for this purpose and in accordance with applicable regulations of the U.S. Army Corps of Engineers and the California Department of Fish and Game. Current maintenance budget and proposed work schedule information can be obtained by contacting the District's Maintenance Department.

The District does not intend to exercise its power of eminent domain in obtaining LEDs. However as a last resort, if an owner refuses to dedicate a limited easement and the District's Board of Directors determines by resolution that an individual limited easement (or group of limited easements) is necessary to make the plan function properly, the District may utilize eminent domain in which case the court will decide whether the District may obtain the proposed easement rights.

FLOOD CONTROL EASEMENT AND FEE TITLE ACQUISITION

In areas where flood control protection measures need to be constructed beyond simple erosion and vegetation control, the District may negotiate acquisition of an appropriate Flood Control Easement (FCE) or fee title (absolute ownership) right of way.

Any proposed FCE or fee title acquisition financial settlement will be subject to ratification by the District's Board of Directors. A sample FCE is included as Exhibit B attached hereto; however, if circumstances on a particular property warrant, an appropriate modification to the language may be made at the District's discretion. Fee title conveyances will be by grant deed (no exhibit).

The extent of property needed for each FCE or fee title right of way will be decided on a case by case basis by District engineers. Each FCE or grant deed will include a legal description and plat (map of the individual easement) both prepared by a California Licensed Land Surveyor at District expense. Property owners granting FCEs or fee title will incur no engineering, title search, deed preparation or recording costs as a result of the conveyance. After a FCE deed is recorded, a notation of it should appear on any subsequent title search on an owner's parcel.

Just compensation for needed FCE or fee title rights of way will be based upon an estimate of market value prepared by an independent real estate appraiser in accordance with Section 1263.320 of the California Code of Civil Procedure. Should acquisition negotiations reach an impasse and if the District's Board of Directors adopts a resolution authorizing condemnation, the needed FCE or fee title property rights may be obtained by eminent domain in which case the court will decide whether the District may obtain the property rights sought and at what price. Further information regarding the District's Land Acquisition Procedures can be obtained by contacting the District's Real Estate Division.

HAZARDOUS SUBSTANCE LIABILITY ASSESSMENT

It is District policy to conduct a Hazardous Substance Liability Assessment (HSLA) to satisfy due diligent inquiry requirement as presented in the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) prior to accepting any right of way for a proposed project. In accordance with this policy the District's Environmental Compliance Division may conduct a visual field survey, personal interviews, records review and a regulatory database review (Phase I) of any proposed right of way to satisfy the due diligent inquiry requirement.

A Phase I assessment was conducted as part of the planning study process. A discussion of this assessment and a copy of the assessment report is contained in the attached Environmental Impact Report. Phase I assessments were not completed on all the properties within the study reach due to trespassing concerns.

Where Phase I assessments have not been completed on a proposed right of way, the Real Estate Division will request that the owner sign a right of entry granting permission for temporary access on their property so that a Phase I assessment can be completed. If the Phase I assessment confirms that the proposed right of way is satisfactorily clear of hazardous materials, no further testing will be completed and the District will accept the right of way.

In cases where the visual field survey indicates that further testing is needed (Phase II), the Real Estate Division will request written permission from the owner to collect soil and/or groundwater samples for further analysis(ses). If the Phase II results confirm that the proposed right of way is satisfactorily clear of hazardous materials, no further testing will be completed and the District will accept the right of way.

However, if Phase II results indicate that contamination levels exceed acceptable levels, the owner will be responsible for disposal and remediation (Phase III) as required by applicable Federal, State and local law or ordinance before the District can accept the right of way.

A copy of the District's HSLA Policy is included as Exhibit C attached hereto.

LIABILITY

The District, a self-insured public agency of the State of California, assumes liability for its maintenance activities and for conditions that it creates on its fee title and easement rights of way. Conveying a limited easement or FCE to the District, however, will not release a property owner from all liabilities related to the easement as the property owner will retain ownership of the easement area.

EXHIBIT A

LIMITED EASEMENT DEED

EROSION AND VEGETATION CONTROL (LED)

(SAMPLE)

RECORD WITHOUT FEE UNDER SECTION 6103
GOVERNMENT CODE OF THE STATE OF CALIFORNIA
AFTER RECORDING RETURN TO:
SANTA CLARA VALLEY WATER DISTRICT
5750 ALMADEN EXPRESSWAY
SAN JOSE, CA 95118

____ hereinafter "Grantor" HEREBY GRANT(S) for public purposes solely, to Santa Clara Valley Water District, a public corporation, ("District"),

AN EASEMENT for erosion and vegetation control on all that certain piece or parcel of real property situate in the County of Santa Clara, State of California, more particularly described as follows: (see "Exhibit A" attached)

District may enter upon the described lands for maintenance and protection of the same to prevent erosion or other damage by flood or storm waters or to repair such damage or to prevent or correct a physical condition thereon threatening damage by flood or storm waters to lives or property and District may take all measures appropriate to such purposes, including the installation of appropriate bank protection and/or stream bed stabilizers; to construct, reconstruct, inspect, maintain and repair the erosion protection works and appurtenant structures, and to trim or remove such trees or brush within the easement area as may reasonably constitute a hazard to persons or property or may interfere with the use of said area for the purposes granted.

Said easement area shall be kept clear of any type of building, fences, structures, pavement or new planting unless prior written approval is obtained from District; excepting nevertheless, structures, pavement and landscaping existing as of the date hereof. District shall accept no liability for existing conditions or existing deteriorations within said easement, or for damage caused by the District through normal use of said easement.

EXHIBIT B

FLOOD CONTROL EASEMENT (FCE)

(SAMPLE)

RECORD WITHOUT FEE UNDER SECTION 6103
GOVERNMENT CODE OF THE STATE OF CALIFORNIA
AFTER RECORDING RETURN TO:
SANTA CLARA VALLEY WATER DISTRICT
5750 ALMADEN EXPRESSWAY
SAN JOSE, CALIFORNIA 95118

SPACE ABOVE THIS LINE FOR RECORDER'S USE

EASEMENT DEED

DOCUMENT NO.:

hereinafter, "Grantor"

Grant, convey and dedicate to the SANTA CLARA VALLEY WATER DISTRICT, a public corporation ("District"), an easement for water management and/or storm water drainage purposes in, upon, over, and across that certain real property, in the City of County of Santa Clara, State of California, described as:

EXHIBIT B

(CONTINUED)

DO NOT WRITE ABOVE THIS LINE

Said easement area shall be kept clear of any type of building, fences, structure, pavement, or trees, unless prior written approval is obtained from District.

The easement shall include the right to construct, reconstruct, inspect, maintain, and repair a channel, protection works, and appurtenant structures, together with the right to trim or remove such trees or brush within the easement area as may constitute a hazard to persons or property or may interfere with the use of the said area for the purposes granted. It also shall include the right to enter upon said land with vehicles, tools, implements, and other materials, take therefrom and use, earth, rock, sand, and gravel for the construction, maintenance, and repair of said channel, protection works, and appurtenant structures by said District, its officers, agents, and employees and by persons under contract with it and their employees whenever and wherever necessary for flood control or storm drainage purposes.

(As used above, the term "grantor" shall include the plural as well as the singular number and the words "himself" and "his" shall include the feminine gender as the case may be.)

Dated this .... day of .... 19.......... .

Signed and delivered in the presence of
(Subscribing Witness Only)

....

....

....

....

ENGINEERING POLICIES & PROCEDURES

Santa Clara Valley Water District

Procedure: 1-850
Page: 1 of 3
Date: February 8, 1995
Coordinator: 08230

SUBJECT: HAZARDOUS SUBSTANCE LIABILITY ASSESSMENT

I. TITLE

Hazardous Substance Liability Assessment

II. BACKGROUND

When acquiring property through purchase, permanent and temporary easement, or lease, the District faces potential liability associated with existing and historical hazardous materials uses. This policy concerning Hazardous Substance Liability Assessment (HSLA) has been adopted by department managers following the June 15, 1993, Board meeting. At that meeting, staff presented a report detailing the need for performing HSLAs in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provision of "due diligence" in property acquisition investigations. HSLAs are performed to demonstrate that "all appropriate inquiry" has been made by the potential buyer and to allow the buyer use of the innocent purchaser defense if latent hazardous materials manifestations occur after the acquisition. The Board acted to support the performance of HSLAs for properties to be acquired by the District.

III. POLICY

An HSLA is an investigation of existing and historical uses of hazardous materials associated with a parcel or group of parcels that are sought for acquisition. By identifying potential hazardous substance liabilities, the HSLA (also referred to as a due diligence site assessment) accomplishes the following primary objectives:

A. Provides the District with information that enables the determination of risks from hazardous substances associated with the property acquisition.

B. Protects the District from financial liability in the event that contamination which occurred prior to property acquisition is discovered after the District acquires the property.

C. Provides the District with the information necessary to negotiate cleanup actions with responsible parties if a hazardous substance cleanup is necessary.

An HSLA shall be conducted prior to property acquisition for all properties acquired by the District in fee title through any method of acquisition, including purchase, gift, grant, or dedication. An HSLA may also be required for properties acquired through permanent easement, temporary easement (including ingress/egress and temporary construction easement), or for properties leased by the District.

SUBJECT: HAZARDOUS SUBSTANCE LIABILITY ASSESSMENT

The procedure for requesting and conducting an HSLA is as follows:

1. For a single parcel of land that is to be acquired through fee title, permanent easement, temporary easement, or for a property that is to be leased, the Environmental Compliance Division (ECD) must be notified of the intended acquisition at least 3 months before the real estate acquisition process begins. This will ensure that the Real Estate Division is aware of hazardous substance liabilities prior to negotiations with the property owner(s). Notification shall be accomplished by forwarding an HSLA Request form (attachment) to ECD. An HSLA shall be performed for all properties to be acquired through fee title. ECD shall make a determination as to whether an HSLA is required for temporary easements, permanent easements, and leased properties, based on the past and intended uses of the property.

2. For multiple parcels of land that are to be acquired through fee title, permanent easement, temporary easement, or lease, such as for flood control projects or water supply facilities, ECD may require a year or more to complete the HSLAs. An HSLA Request form should be submitted to ECD in the early project planning stages. Multiple properties requiring investigation along an alignment should be submitted with a single form.

3. Upon receiving the white and yellow copies of the HSLA Request form, ECD will forward the yellow copy to the Real Estate Division and request the Real Estate Division to secure necessary right of entry agreements to perform HSLA Phase I field investigations.

4. ECD shall perform or provide for performance of a Phase I HSLA. The scope of the Phase I HSLA may vary, based on past and future intended property uses. The basic Phase I HSLA investigation may include the following elements:

    a. Investigation of site history
    b. Review of property ownership
    c. Review of site photographs and maps
    d. Site reconnaissance
    e. Interviews with property owners or other parties familiar with the property
    f. Limited soil, groundwater, or substances sampling and analysis

    A Phase I HSLA will typically be completed within 3 months after an HSLA Request form has been received from the requesting division and right of entry for Phase I activities has been obtained.

5. Based upon the findings of the Phase I HSLA, ECD may recommend that a Phase II HSLA be performed on the subject property. A Phase II HSLA will typically be recommended when the findings of the Phase I indicate a potential for hazardous substances to be present

at the site. This recommendation, and cost estimates, will be transmitted to the requesting division for review and direction to proceed. Upon receipt of written notification to proceed with the Phase II, ECD will coordinate with the Real Estate Division to secure any additional right of entry agreements necessary to perform Phase II HSLA field investigations.

6. The scope of the Phase II HSLA is determined based on the results of the Phase I HSLA. The basic Phase II HSLA investigation typically includes collection and analysis of on-site soil, groundwater, or other potentially hazardous substances. Other methods identified by ECD may be used to determine the nature and extent of hazardous substance liabilities.

   A Phase II HSLA will typically be completed within 3 months to 1 year after a written notification to proceed has been received from the requesting division and right of entry for Phase II activities has been obtained.

7. ECD will retain the original HSLA report(s) and transmit copies of the HSLA report(s) to the requesting division and to the Real Estate Division.

APPENDIX H

THE 1 PERCENT FLOOD

DEFINITION

The 1 percent flood is that flow of water from a drainage area that, on the average and over a long period of time, has a 1 percent chance (probability of 0.01) of being equalled or exceeded in any given year. It is sometimes referred to as the 100-year flood, but it should not be thought of as an event that occurs regularly every 100th year. Instead, it is the flood flow that would be equalled or exceeded perhaps about 100 times in 10,000 years. It is also possible that two repetitions of this flood flow could occur in a single year or that a single event may not occur even once in 200 years.

THE 1 PERCENT FLOOD AND THE 1 PERCENT STORM

Another terminology problem is relation of the 1 percent storm and the 1 percent flood. Storm magnitude relates to flood magnitude through a complex set of parameters such as antecedent rainfall conditions, drainage basin shape, length, slope, orientation, and other factors. Therefore, a 1 percent storm will not necessarily produce a 1 percent flood. The 1 percent flood should not be confused with, nor should it be referred to as, the "1 percent storm" or the "1 percent storm flood."

CUMULATIVE RISK

The 1 percent flood has a small risk of occurrence in a given year, but the risk is cumulative. When compared with the 30-year life of the average home loan, for example, the chance that such a flood will occur is quite large. During the 30-year loan period, the chance that a 1 percent flood will occur, or will be exceeded, approaches 30 percent.

THE "1 PERCENT FLOOD" AND THE "DESIGN FLOOD"

Another relationship that requires explanation is that which exists between the "1 percent flood" and a "design flood." A design flood is any particular flood magnitude chosen for designing a flood control project. A design flood could be the 1 percent flood or it could also be a flood of another frequency of occurrence. The 1 percent design flood (used by the District as its design standard) represents the expected future flow of water from a watershed without constriction, undue storage, or delay. The 1 percent flood under existing watershed conditions (the existing 1 percent flood) is the flood developed from a watershed with existing limited capacity channels. Such a flood is used by the Federal Emergency Management Agency as a standard for its flood insurance program.

1 PERCENT PEAK FLOWS AND 1 PERCENT VOLUMES

In general, floods are identified in terms of their peak flows and volumes. In practice, the 1 percent flood refers to the **1 percent peak flow rate** when designing flood control channels and similar water structures. The 1 percent flood also refers to the **1 percent volume** of water when defining overbank storage or when designing flood retention and detention facilities.

THE DISTRICT'S HYDROLOGY AND THE 1 PERCENT FLOOD

The magnitude of the 1 percent flood is calculated using statistical hydrologic methods. The District uses a uniform method of determining the 1 percent flood, one that is regional in scope and based on the best available rainfall and runoff information from areas within and adjacent to the County. The regional process utilized by the District was developed after considerable effort and has been reviewed and approved by the academic and professional communities.

FACTORS AFFECTING FLOODS

The major causes of floods are the preceding storms and their intensity distributions. Other factors that would affect the peaks and/or volumes of floods relate to the physical characteristics of watersheds, either rural or urban.

For rural watersheds these factors are: slope; ground cover; basin shape; soil type, etc. For urban watersheds, natural conditions are modified by increasing the impervious areas and by making the flow paths more efficient. Rooftops, pavement rain gutters, downspouts, curbs, storm drains, levees, and culverts can increase the volumes and peaks of flood flows, especially in hilly terrain with steep slopes.

In the flatland, the limited capacity of the storm drainage system and the conditions of the levees along the adjacent channels may reduce the peaks of larger urban floods and thereby retain the water in the urban watershed for a longer time. This may serve to increase local flooding of urban areas and cause no increase in the flow within the main channel. Therefore, depending on the local conditions, urbanization could have the effect of increasing or decreasing the flow in the main channels.

A. D. Saah
District Hydrologist
March 21, 1989

APPENDIX I

ADOBE CREEK HYDROLOGY

SANTA CLARA VALLEY WATER DISTRICT

ADOBE CREEK HYDROLOGY

Prepared by

Abdullah Saah
Senior Civil Engineer
Project Development Branch

APRIL 1989
(Edited January 1994)

TABLE OF CONTENTS

PREFACE 1

DISTRICT'S HYDROLOGIC METHOD 2
    EFFECT OF URBANIZATION 3
    CALCULATION OF DESIGN FLOWS 3
        Rainfall/Runoff Analysis 5
        Statistical Analysis of the Matadero Creek Stream Gage Records 5
        Regional Flood Frequency Analysis 8
    FINAL DESIGN FLOOD FLOW VALUE 9

BIBLIOGRAPHY 15

APPENDICES

APPENDIX 1   Diagram of District's Hydrologic Method

APPENDIX 2   Analysis of Stream Flow Data From Matadero Creek Gauging Station (1952-1989)

PREFACE

This report explains the Santa Clara Valley Water District's (District) hydrologic methods and addresses the hydrologic analyses done in 1978 on Matadero, Adobe, and Barron Creeks. It also discusses the stability of the findings of the 1978 study when compared with a statistical analysis of the data from Matadero Creek Gaging Station through the 1989 water year.

DISTRICT'S HYDROLOGIC METHOD

The District's hydrologic method has evolved over many years into a procedure that has achieved the endorsement of nationally and internationally respected hydrologists. A panel of nationally recognized hydrologists reviewed the District's method in 1976 and recommended that it be disseminated to other flood control agencies for possible adoption as a national standard[1].

The method relies primarily upon historical local as well as regional streamflow data and secondarily upon rainfall data.

It deals with rural, urban, gaged or ungaged watershed that are either regulated by reservoirs or unregulated.

Santa Clara County is fortunate in having many years of streamflow and rainfall data collected at over 100 gages under a highly competent data collection program. In addition to the District-maintained hydrologic gage network, there are several gaging stations owned and operated by the United States Geological Survey (USGS), and others.

The Adobe Creek watershed is mostly rural in the upper foothills and heavily urbanized in the flats. It does not have any streamflow gages that have an adequate length of record.

The analysis of the hydrology of such a watershed includes the use of all the hydrometeorologic information that are available from the immediate areas.

For this reason, the District used three techniques that derive comparative results (design peak flows and maximum volumes) on any watershed similar to Adobe Creek's. Those three techniques are:

- An analysis of the rainfall/runoff relationship for the watershed (unit hydrograph analysis).
- A statistical analysis of historical stream gage records in the watershed of the facility being designed.
- A regression analysis of historical stream gage records of streams in the surrounding area (regional flood frequency analysis) as applied to the watershed in question.

The results of the three analyses are compared. In fact, the three sets of results can each be given a numerical weighing factor equal to the calculated standard error of estimate, and the finally selected 1 percent flow and 1 percent volume can, if appropriate, be computed as the weighted average of each of the three results. In some cases, the use of a weighted average is not recommended, and rather, one of the three sets of results might be selected for design.

The District's three techniques are shown in a block diagram presented in Appendix 1.

---

[1] The panel, and their affiliations in 1976, were: Professor Leo R. Beard, University of Texas; David R. Dawdy, U. S. Geological Survey; Professor Neil S. Grigg, Colorado State University; Professor L. Douglas James, Georgia Institute of Technology; Professor V. Yevjevich, Colorado State University.

EFFECT OF URBANIZATION

The effect of urbanizing the watershed is addressed in District's reports *Hydrology Documentation For The Northwest Flood Control Zone* and *Urban Hydrology Methodology* (listed in Bibliography).

In summary, the two major changes that take place as a result of urban growth are increased imperviousness and channelization. Imperviousness is caused by roof tops, street pavement, concrete and other impervious surfaces. Channelization is caused by gutters, enlarged water courses, storm drains and other improved flow channels. Both of these factors tend to increase the flow—to a certain extent.

On the valley floor, where the land is relatively flat and storm drains are designed for very frequent (small) floods (2 to 10 year floods), urban areas tend to behave like storage facilities. These storage facilities retain the larger floods in the urban area for a longer time thereby reducing the impact of the peak flows on the main flood control channels (volumes are always increased). In the foothills, the effect of storm drains as a constriction is not evident. Urban growth in the upper watershed increases the flow in the main channel, especially if the land-use density is high and the cumulative effects are accounted for.

The extent of urbanization of the Adobe Creek upper and lower watersheds was assumed, for the purpose of this study, to conform to the General Plans of the cities.

CALCULATION OF DESIGN FLOWS

The District has calculated 1 percent, or 100-year, peak flows and their related runoff volumes for the watersheds and sub-watershed of Adobe Creek, Matadero Creek, and Barron Creek (Figure 1). The results of that study are documented in the District's 1978 report *Hydrology Documentation for the Northwest Flood Control Zone* (listed in Bibliography). That report, and several others available at the District office, provide more detailed information.

The first part of the analysis employs the unit hydrograph technique (as presented in the U.S. Army Corps of Engineers [Corps] HEC-1 program [listed in the Bibliography]) to convert a design storm to a corresponding flood. Based on that, a generalized hydrologic model is built that simulates the response of each of the three watersheds (Adobe, Matadero and Barron) to design storms. Again, reference is made to Northwest Flood Control Zone Report (listed in the Bibliography), for more information. The inputs to the model are:

- The synthetic unit hydrograph parameters that were generated for each sub-watershed of the three creeks.
- The storm volume, its duration, and the frequency of occurrence as developed from the analysis of the long term rainfall data in and around the watershed.
- The areas of rural and urban sub-watersheds, slopes, antecedent moisture conditions, and the recession characteristics as well as the loss rate functions.

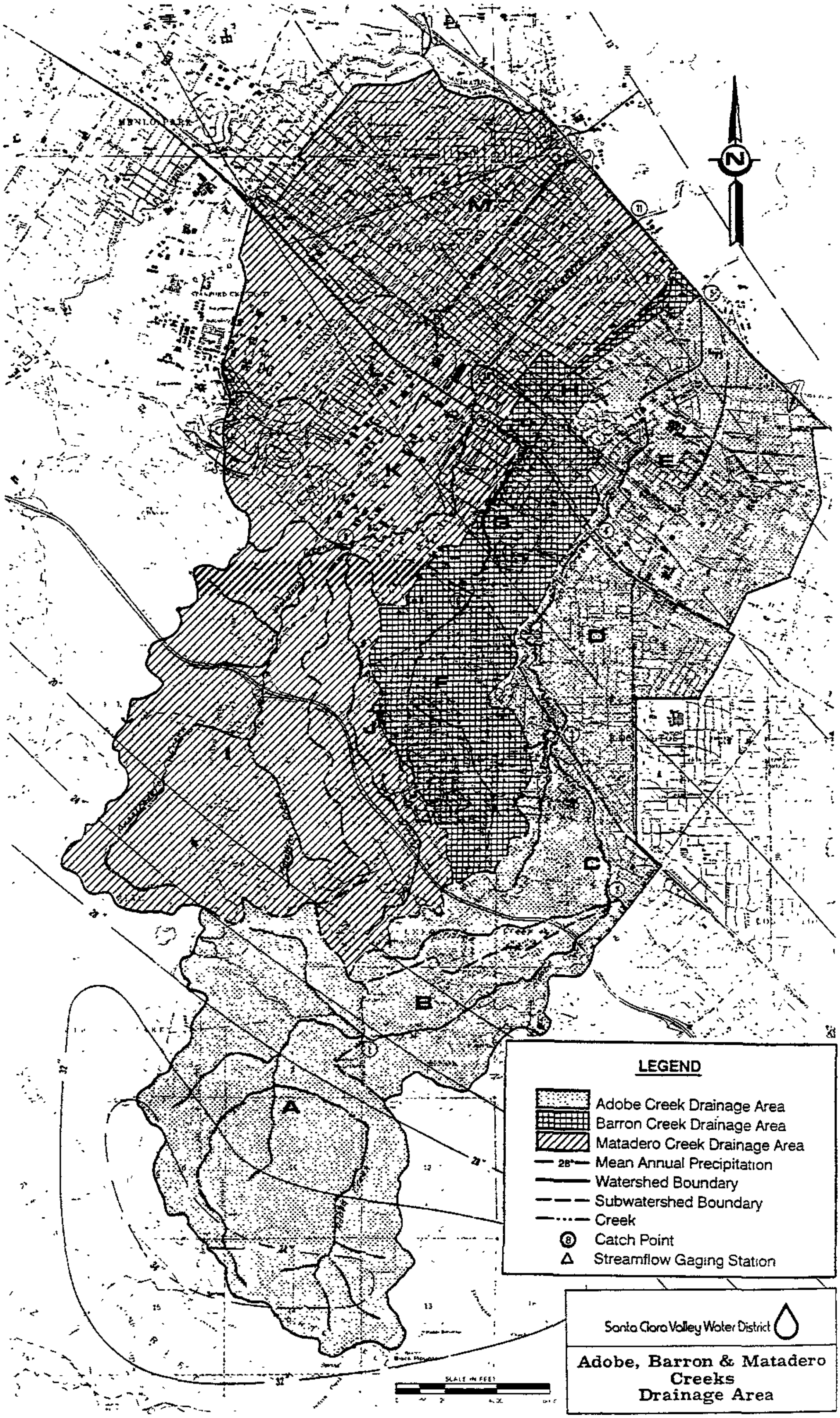

MENLO PARK
M
L
K
J
I
H
G
F
E
D
C
B
A
LEGEND
Adobe Creek Drainage Area
Barron Creek Drainage Area
Matadero Creek Drainage Area
28" Mean Annual Precipitation
Watershed Boundary
Subwatershed Boundary
Creek
Catch Point
Streamflow Gaging Station
Santa Clara Valley Water District
Adobe, Barron & Matadero Creeks Drainage Area
SCALE IN FEET

FIGURE 1

Of the three creeks in the immediate area, only Matadero Creek is instrumented with a gaging station that has a long historical record of streamflows and volumes. The newly constructed stream gage at Adobe Creek (constructed in 1987) is not mature and is less reliable for statistical analysis at the present time. For this reason, the record from the Matadero gaging station was used to verify the results of the hydrologic rainfall-runoff model discussed above. Such verification (calibration) of the model on the gaged Matadero location will permit the use of this model on the Adobe Creek watershed (an ungaged watershed). At the Matadero Creek stream gage location near El Camino Real, design peak flows and corresponding volumes were calculated using the three separate techniques described previously. The resultant peak flows and volumes from those analyses are described below:

Rainfall/Runoff Analysis

The first analysis deals with rainfall-runoff modeling. As discussed above, this modeling was used to generate independent estimates of peak flows and volumes on Matadero Creek at the stream gage location near El Camino Real.

The results of the unit hydrograph analysis for the 1 percent peak and volume of flood on Matadero Creek are shown on Figures 2 and 3 as points on the frequency lines. The results are:

Peak Flow	2,091 cubic feet per second (cfs)
Volume	24-hour volume = 909 cfs-24 hours (which is equivalent to 1,800 acre-feet or about 4.5 inches of excess rainfall)

Statistical Analysis of the Matadero Creek Stream Gage Records

Analyses of the streamflow data at the Matadero Creek gage are shown on the following graphs. Figures 2 and 3 show the actual historical and derived (stochastically reconstituted) peak flows and historical and reconstructed volumes (dotted points) together with their frequency of occurrence. The solid lines through the data points in the two graphs have been plotted using the recommended technique of the United States Water Resources Council, 1982. In Figure 2, the broken heavy line shows the design condition and reflects the effect of urbanization which can, because of the proliferation of paving, roof tops and other impervious surfaces, act to increase runoff. That effect is more pronounced for frequent flood events (left end of the graph) and less pronounced for less frequent flood events (right end of the graph).

Figure 3 shows the design 24-hour volume (heavy broken line) compared to the historical record. Notice the effect that urbanization has on increasing runoff volumes as shown by the line labeled ``urbanization."

The District's analysis of the Matadero Creek stream gage records gives the following estimate of the 1 percent peak flow and corresponding volume (Figures 2 and 3):

MATADERO CREEK STREAM GAGE
Near El Camino Real
PEAK FLOWS

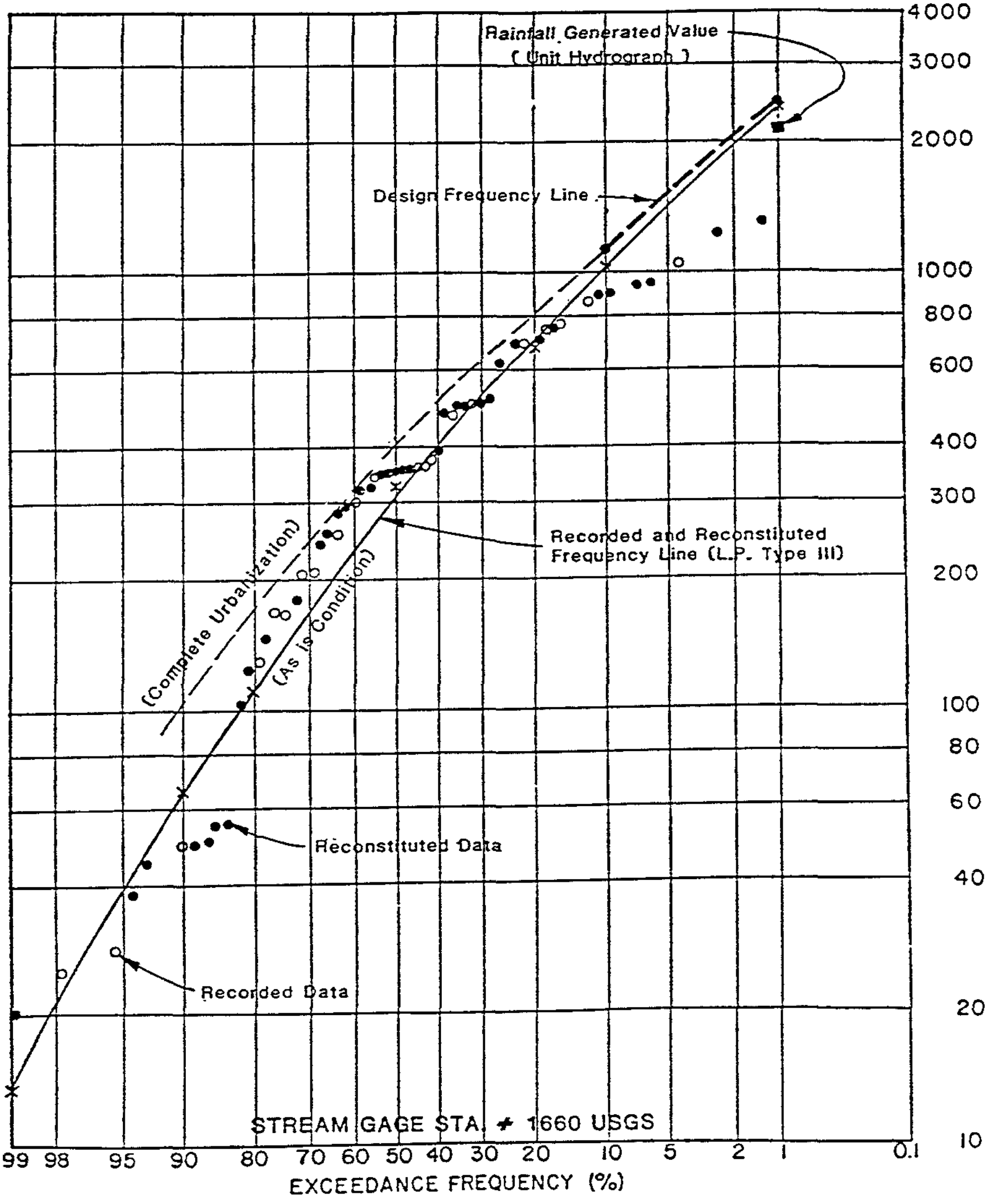


FIGURE 2

MATADERO CREEK STREAM GAGE

Near El Camino Real

(Design Volumes)

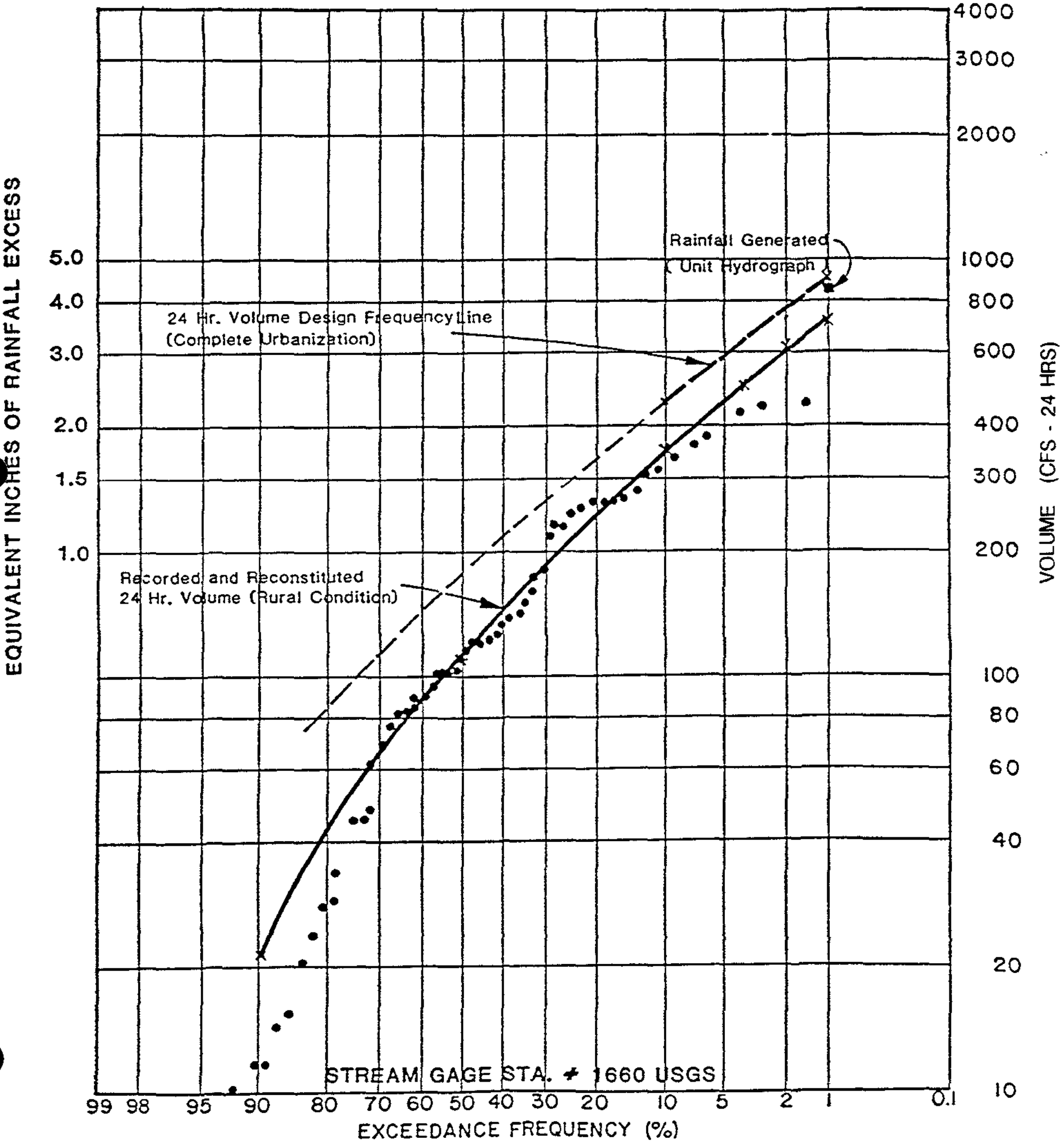


FIGURE 3

Peak Flow	2,310 cfs (the District's 1978 Northwest Zone report inadvertently reports this as 2,170 cfs due to a typographical error)
Volume	24-hour volume = 710 cfs-24 hours (which equates to 1,405 acre-feet of volume or about 3.7 inches of excess rainfall)

Note: See Appendix 2 for an update of the flood frequency for the Matadero Creek stream gage using the updated data through 1989.

Regional Flood Frequency Analysis

The third comparison technique used by the District is an analysis of the historical streamflow data at the Matadero Creek stream gage compared to data from the immediate hydrometeorological region—that is, the area encompassing Santa Clara County and some surrounding areas which are considered subject to similar storm patterns. This regional analysis permits comparison of the Matadero Creek streamflow record with the streamflow records of gages representing most watersheds in the region. Some 30 such stations were compared for this regional analysis.

One streamflow station in the region with a very long record is on Arroyo Seco Creek, a tributary of the Salinas River south of Salinas. This station has over 100 years of good record and the information in that record is considered to be the most valuable information in any hydrologic study of the region. The Arroyo Seco station is considered by the USGS and the Corps to be within the same hydrometeorologic region (Region A) as other stations in Santa Clara County, as shown on Figure 4, and was therefore analyzed along with approximately 29 other stations.

The results of this regional analysis are two sets of regional regression equations. One relates the statistics of the peak flows to the mean annual precipitation, watershed area, slope and length of creeks, etc. The other set relates the statistics of the runoff volumes (24-hour, 1-day, 2-day and 3-day) to those same watershed characteristics. The District's regional regression equations are updated (if necessary) as more years of hydrologic data are gathered (every ten to fifteen years). The equations are currently listed in the District's 1976 report, *Development of Regional Regression Equations* (listed in Bibliography). The report is available from the District upon request.

At the Matadero Creek stream gage location, the 1 percent flood and volumes that resulted from the application of the regional regression equations are as follows (refer to Figure 2 for peak flows and Figure 3 for volumes):

Peak Flow	2,369 cfs
Volume	24-hour volume = 912 cfs-24 hours which is equivalent to 1,800 acre-feet or 4.5 inches of excess rainfall

The following is a list of some recorded rainfall events in Adobe Creek region:

6.5 inches in 1967 at Dahl Ranch No. 24

5.3 inches in 1986 at Los Altos 2 No. 45

3.0 inches in 1986 at Los Altos Fire Station No. 47

Note: The recorded values are of higher probabilities of occurrences than the 1 percent value.

FINAL DESIGN FLOOD FLOW VALUE

The final design flow (2,369 cfs) adopted for the Matadero Creek gage location is based on the application of the regional regression equations. This value is close to the weighted flow value obtained from the rainfall/runoff analyses, the statistical analyses, and the application of the regional regression equations as shown above.

Table 1 is a summary of the results of these three independent techniques. It shows a very close agreement among the results as compared to the weighted average and, therefore, the results of the regional analysis were selected for use in designing the flood control projects on Adobe, Matadero and Barron Creeks.

Tables 2 and 3 show the final design flows on the three creeks including the flows on Adobe Creek at the corresponding catch points. Figure 1 (presented earlier) shows the various watersheds, sub-watersheds and the corresponding catch points. Those values were obtained from the application of the unit hydrograph model (discussed above) to the three watersheds to generate peaks and volumes. Using the results of the regional regression analysis at each location, those peaks and volumes were balanced and the resultant balanced (design flood) flows are routed downstream.

The study included the application of the urban hydrology methods to determine flood flows from the pervious and impervious parts of the developed urban areas within the designated watersheds. This entailed an intensive study of storm drain systems and land uses in order to understand the effect of these urban features on the rate and timing of runoff.

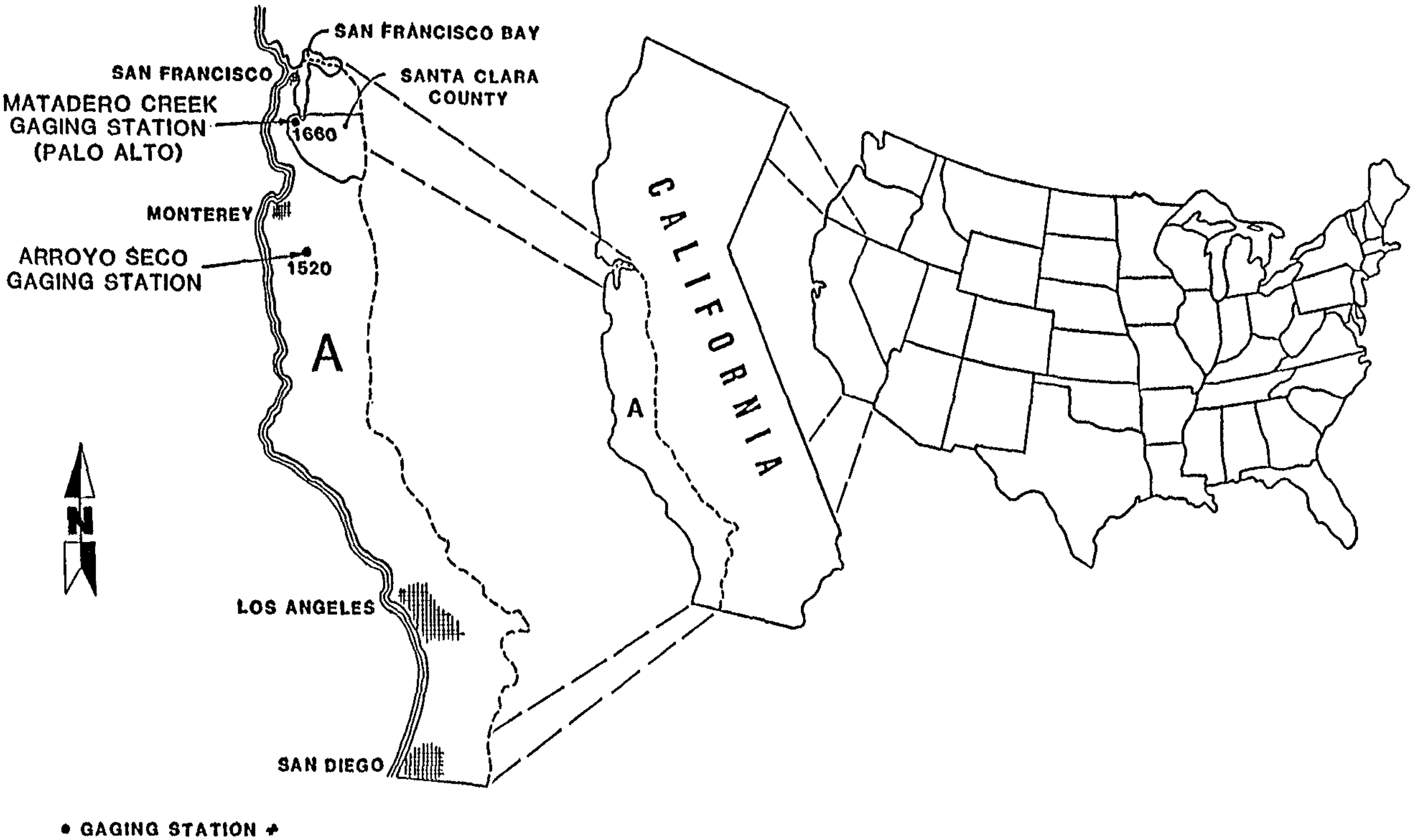
On Adobe Creek, Table 2 shows that the 1 percent flow at a point of reference upstream of the confluence with Barron Creek, is 3,080 cfs. The corresponding watershed area is equal to 10.84 square miles. This gives a unit value of 285 cfs per square mile—a very reasonable value when compared to the unit values on other locations in the area (280 on Barron Creek, 312 on Matadero Creek).

Similarly, Table 3 shows that the 10 percent flow in Adobe Creek at the same point of reference is 1,822 cfs.

Tables 2 and 3 also show the design flood flows and volumes for the proposed project at various catch points.

For more information about the detailed hydrologic calculations used to generate Tables 2 and 3 please refer to Northwest Flood Control Zone Hydrology Report (listed in Bibliography).

See Appendix 2 for an update of the flood frequency for the Matadero Creek stream gage using the updated data through 1989.



MAP OF PACIFIC SLOPE BASINS IN CALIFORNIA SHOWING GAGING STATIONS AND FLOOD FREQUENCY REGION A

FIGURE 4

TABLE 1
Summary of District Flow Values
Matadero Creek at USGS No. 1660

	1% Peak Flow (cfs)	1%-24 Hour Volume (cfs-24 hr)	Equivalent Excess Rainfall (inches)
1. Statistical analysis of recorded data	1,945		
2. Statistical analysis of recorded and reconstituted data	2,310	710	3.7
3. Rainfall-runoff	2,091	909	4.5
4. Regional regression	2,369	912	4.5
5. Weighted (2&4)	2,320	745	3.7

Note: The values in this table are based on data collected between 1952 and 1978. See Appendix 2 for a preliminary checking of these values using the data through 1989.

TABLE 2
Recommended Design Flows—1% Flood
Matadero, Barron, and Adobe Creeks

Location	Catch Point	Peak (cfs)	6-Hour (cfs)	24-Hour (cfs)	Drainage Area (square miles)
Adobe Creek at City Limits	1	**1,558**	**1,015**	**597**	**4.25**
Adobe Creek u/s Purissima Creek	2	**2,002**	**1,330**	**774**	**5.53**
Adobe Creek at Foothill Expressway	3	**2,748**	**1,707**	**983**	**7.10**
Adobe Creek at El Camino Real	4	**2,938**	**1,910**	**1,171**	**8.90**
Adobe Creek u/s Barron Creek	5	**3,080**	**2,126**	**1,375**	**10.84**
Barron Creek at Foothill Expressway	6	762	403	222	1.76
Barron Creek at El Camino Real	7	829	492	305	2.56
Barron Creek u/s Adobe Creek	5	834	552	362	3.09
Adobe-Barron at Highway 101 (Bayshore Freeway)	5	3,914	2,676	1,736	13.93
Matadero Creek u/s Deer Creek	8	1,455	873	489	3.92
Deer Creek u/s Matadero Creek	8	744	394	215	1.60
Matadero Creek at Foothill Expressway	8	2,199	1,260	704	5.52
Matadero Creek at El Camino Real(USGS gage)	9	2,359	1,486	912	7.55 USGS
Matadero Creek at Alma Street	10	2,545	1,698	1,113	9.42
Matadero Creek at Highway 101 (Bayshore Freeway)	11	2,928	2,166	1,557	13.57
Matadero-Barron-Adobe Inflow to Palo Alto Flood Basin	5,11	6,842	4,842	3,291	27.50

TABLE 3
Ten Year Flood Flows
Matadero, Barron, and Adobe Creeks

Location	Catch Point	Peak (cfs)	6-Hour (cfs)	24-Hour (cfs)	Drainage Area (square miles)
Adobe Creek at City Limits	1	**821**	**615**	**316**	**4.25**
Adobe Creek u/s Purissima Creek	2	**1,111**	**788**	**399**	**5.53**
Adobe Creek at Foothill Expressway	3	**1,433**	**988**	**490**	**7.10**
Adobe Creek at El Camino Real	4	**1,635**	**1,161**	**633**	**8.90**
Adobe Creek u/s Barron Creek	5	**1,822**	**1,360**	**778**	**10.84**
Barron Creek at Foothill Expressway	6	323	199	95	1.76
Barron Creek at El Camino Real	7	409	280	159	2.56
Barron Creek u/s Adobe Creek	5	455	334	199	3.09
Adobe-Barron at Highway 101 (Bayshore Freeway)	5	2,277	1,694	977	13.93
Matadero Creek u/s Deer Creek	8	641	445	218	3.92
Deer Creek u/s Matadero Creek	8	320	198	93	1.60
Matadero Creek at Foothill Expressway	8	961	639	311	5.52
Matadero Creek at El Camino Real (USGS gage)	9	1,181	844	459	7.55
Matadero Creek at Alma Street	10	1,378	1,037	608	9.42
Matadero Creek at Highway 101 (Bayshore Freeway)	11	1,794	1,465	928	13.57
Matadero-Barron-Adobe Inflow to Palo Alto Flood Basin	5,11	4,071	3,158	1,904	27.50

BIBLIOGRAPHY

Astrue, J., J. Sutcliffe, and M. McNeely, *Report on Flooding and Flood Related Damage, January 1, to April 30, 1984*, October 1984.

Beard, L.R., L.D. James, D. R. Dawdy, V. Yevjevich, and N.S. Grigg, *Review of Basic Hydrologic Methodology for Flood Control*, Santa Clara Valley Water District, April 1976.

Beard, L. R., *Statistical Methods in Hydrology*, U. S. Army Corps of Engineers, The Hydrologic Engineering Center, January 1962.

Chow, V.T., *Handbook of Applied Hydrology*, 1964.

Department of Water Resources, *Rainfall Analysis for Drainage Design*, Bulletin #195, October 1976.

Feiring, M., *Use of Correlation to Improve Estimates of the Mean and Variance*, United States Geological Survey Paper 434C.

FEMA-37, *Flood Insurance Study, Guidelines and Specifications For Study Contractors*, Federal Emergency Management Agency, September 1982.

Jennings and Benson, *Frequency Curves for Annual Flood Series with Incomplete Data*, United States Geological Survey, 1969.

Langbein, W. B., *Annual Floods and Partial Duration Series*, Trans. W. G. W. Vol. 30, 1949.

Matalas, N. and B. Jacobs, *A Correlation Procedure for Augmenting Hydrologic Data*, United States Geological Survey Paper No. 434 E, 1964.

Saah, A. D., R. R. Talley, and W.J. Sanchez, *Development of Regional Regression Equations*, Santa Clara Valley Water District (Draft Report), March 1976.

Saah, A. D., E. Watson, *Urban Hydrology Methodology*, Paper presented at the National Symposium on Urban Hydrology, Santa Clara Valley Water District, March 1976.

Saah, A. D., *Hydrology Documentation For Northwest Flood Control Zone*, Santa Clara Valley Water District, July 1976.

Salas, J., V. Yevjevich, Boas, Delleur, Schaake et. al., *Lecture Notes for the Computer Workshop in Statistical Hydrology*, Colorado State University, July 1978.

Thomas, W. O., Jr., *An Evaluation of Flood Frequency Estimates Based on Rainfall/Runoff Modeling*, Water Resources Bulletin, American Water Resources Association, April 1982.

U.S. Army Corps of Engineers, *HEC-1 Flood Hydrograph Package*, The Hydrologic Engineering Center, 1973.

U.S. Army Corps of Engineers, HEC Program 723-X6-L2350, *Regional Frequency Computations*, The Hydrologic Engineering Center, 1972 Update.

U.S. Army Corps of Engineers, HEC Program No. 704-GI-L202, *Multiple Linear Regression*, The Hydrologic Engineering Center.

Water Resources Council, *Guidelines for Determining Flood Flow Frequency*, Bulletins 17 and 17B.

Water Resources Council, *Estimating Peak Flow Frequencies For Natural Ungaged Watersheds*, A Proposed Nationwide Test, Hydrology Committee, 1981.

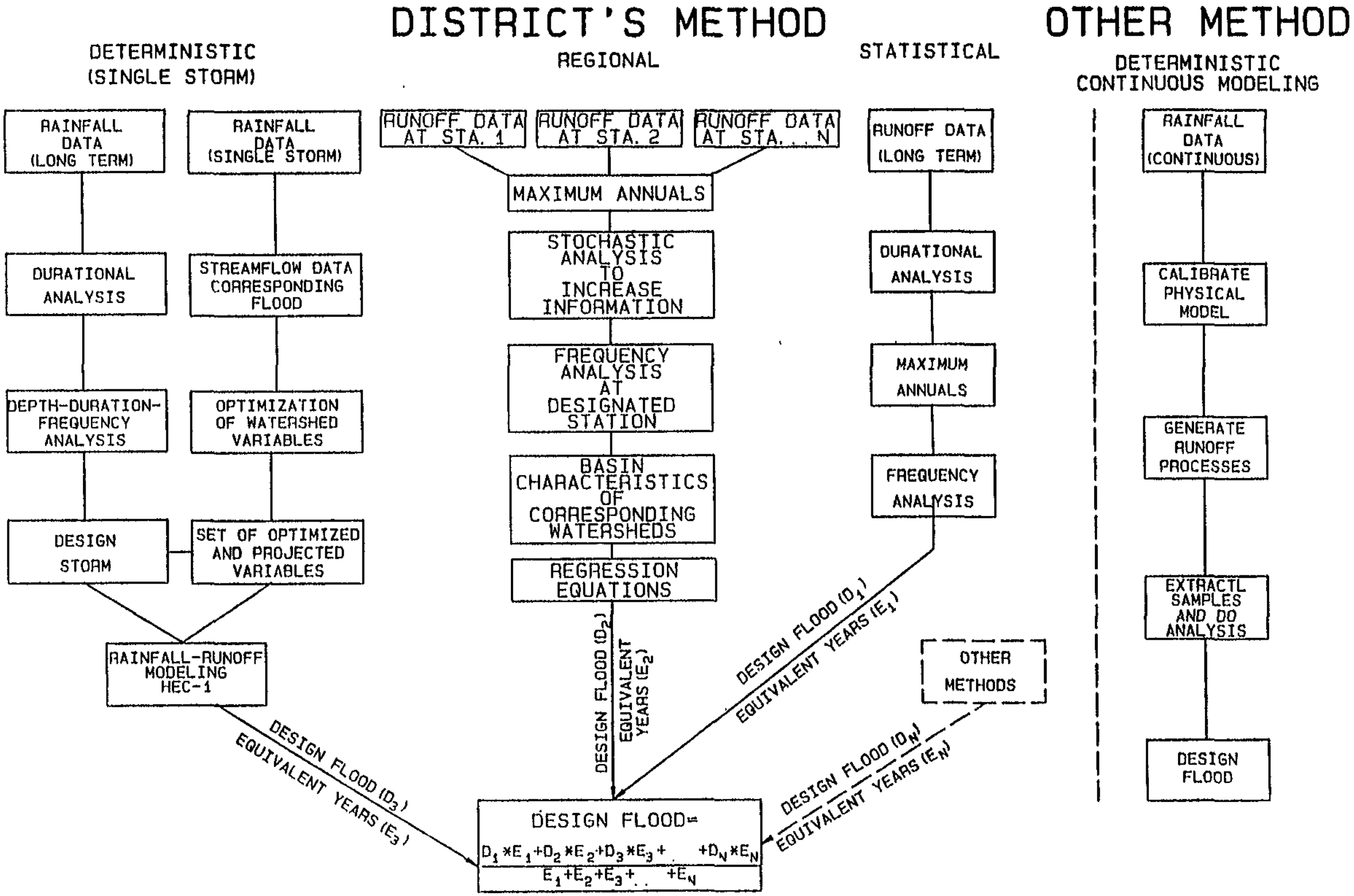
Water Resources Council, *A Unified National Program for Flood Plain Management*, July 1976.

Yevjevich, V. and D. B. Simon, *Review of Methods Used for Estimation of Floods In Santa Clara Valley*, Santa Clara Valley Water District, September 1967.

Other office reports, computations and computer printouts—available from the District library.

APPENDIX 1

DIAGRAM OF DISTRICT'S HYDROLOGIC METHOD


DISTRICT'S METHOD
OTHER METHOD
DETERMINISTIC (SINGLE STORM)
REGIONAL
STATISTICAL
DETERMINISTIC CONTINUOUS MODELING
RAINFALL DATA (LONG TERM)
RAINFALL DATA (SINGLE STORM)
RUNOFF DATA AT STA. 1
RUNOFF DATA AT STA. 2
RUNOFF DATA AT STA. . . N
RUNOFF DATA (LONG TERM)
RAINFALL DATA (CONTINUOUS)
MAXIMUM ANNUALS
DURATIONAL ANALYSIS
STREAMFLOW DATA CORRESPONDING FLOOD
STOCHASTIC ANALYSIS TO INCREASE INFORMATION
DURATIONAL ANALYSIS
CALIBRATE PHYSICAL MODEL
FREQUENCY ANALYSIS AT DESIGNATED STATION
MAXIMUM ANNUALS
DEPTH-DURATION-FREQUENCY ANALYSIS
OPTIMIZATION OF WATERSHED VARIABLES
GENERATE RUNOFF PROCESSES
BASIN CHARACTERISTICS OF CORRESPONDING WATERSHEDS
FREQUENCY ANALYSIS
DESIGN STORM
SET OF OPTIMIZED AND PROJECTED VARIABLES
REGRESSION EQUATIONS
EXTRACTL SAMPLES AND DO ANALYSIS
RAINFALL-RUNOFF MODELING HEC-1
DESIGN FLOOD (D2)
EQUIVALENT YEARS (E2)
DESIGN FLOOD (D1)
EQUIVALENT YEARS (E1)
OTHER METHODS
DESIGN FLOOD
DESIGN FLOOD (D3)
EQUIVALENT YEARS (E3)
DESIGN FLOOD (DN)
EQUIVALENT YEARS (EN)
DESIGN FLOOD=
D1*E1+D2*E2+D3*E3+ . . +DN*EN / E1+E2+E3+ . . +EN

APPENDIX 2

ANALYSIS OF STREAM FLOW DATA FROM MATADERO CREEK GAGING STATION

(1952-1989)

ANALYSIS OF STREAMFLOW DATA FROM MATADERO CREEK GAGING STATION (1952-1989)

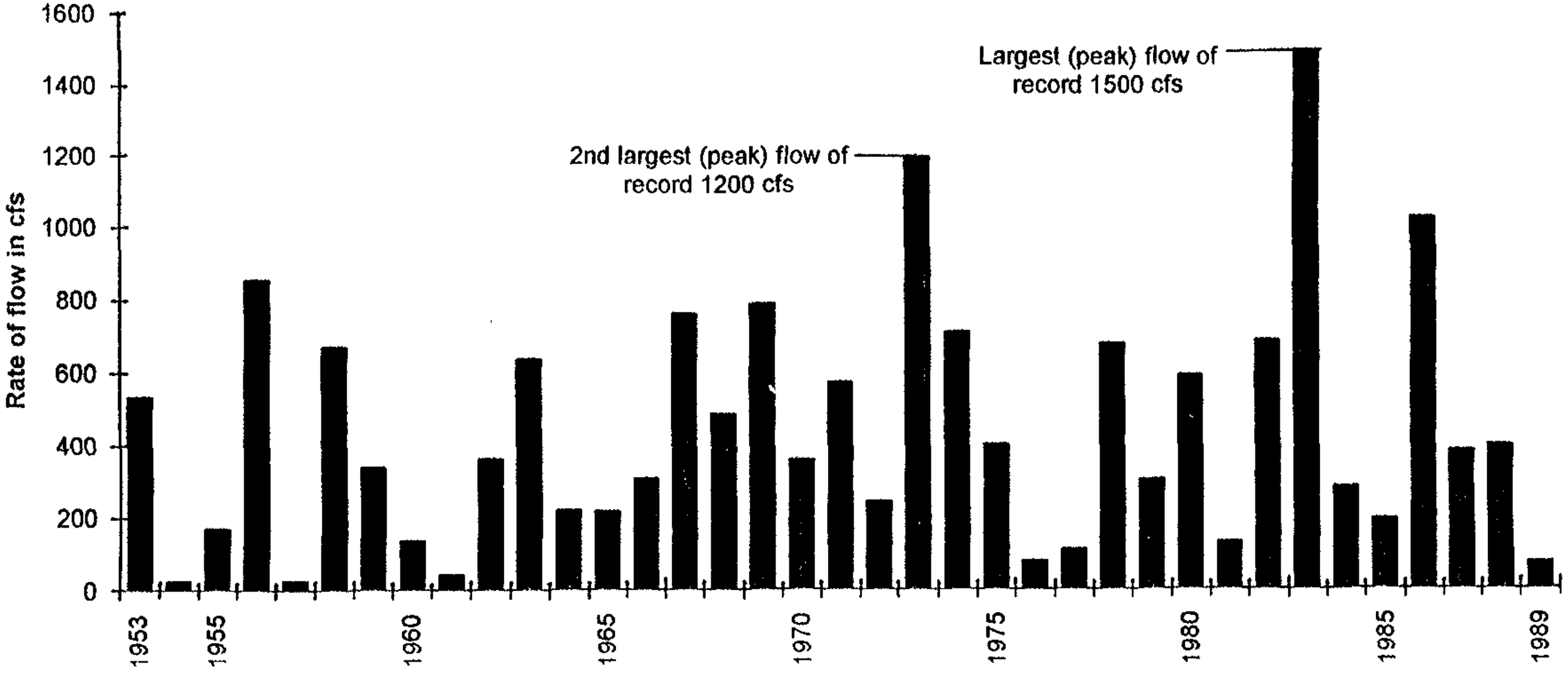
Since the 1978 update of hydrology methods and the calculation of design flows, the number of annual streamflow records at USGS gaging station no. 1660 (Matadero Creek at El Camino Real) have increased from 23 years (1952-75) to 37 years (1952-89). This appendix contains a graphical presentation of this data together with two updated preliminary frequency analyses of the data covering the period between 1952 and 1989, using the Log Pearson Type III distribution. The first analysis assumes a regional coefficient of skewness (CS) equal to -0.4 and the other analysis assumes a regional CS equal to -0.6. The resultant 1 percent flood values of 2,020 cfs and 1,880 cfs respectively are obtained at the gaged location. These values are approximately equal to the original value of 1,945 cfs at the same location (Table 1), which makes us confident that the Matadero Creek design flood flows obtained in 1978 are still valid today.

Due to its close proximity to Matadero Creek, and due to the use of a similar hydrologic techniques, the original 1 percent design flood flows of 3,100 cfs on Adobe Creek presented in Tables 2 and 3 are still valid.

Attached are copies of this preliminary updated frequency analysis.

MATADERO CREEK BAR GRAPH

Maximum Flows for the Year (1953-1989)



2nd largest (peak) flow of record 1200 cfs

Largest (peak) flow of record 1500 cfs

```
**TITLE CARD(S)**
TT   Matadero creek (USGS #1660) LOG PEARSON TYPE 3 ANALYSIS
TT
TT   C.E. NAHN 4/18/89

**GENERALIZED SKEW**
     ISTN   GGMSE     SKEW
GS   1660    .130     -.40

**SYSTEMATIC EVENTS**
     37 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++



 FINAL RESULTS
-PLOTTING POSITIONS-  1660
********************************************************************
*.....EVENTS ANALYZED......*...........ORDERED EVENTS..........*
*                          *         WATER                 WEIBULL  *
* MON DAY  YEAR  FLOW,CFS  *   RANK  YEAR    FLOW,CFS   PLOT POS *
*--------------------------*------------------------------------*
*  12   6  1952     535.   *     1   1983      1500.     .0263   *
*   3  19  1954      26.   *     2   1973      1200.     .0526   *
*   1  18  1955     170.   *     3   1986      1030.     .0789   *
*  12  22  1955     854.   *     4   1956       854.     .1053   *
*   2  24  1957      28.   *     5   1969       792.     .1316   *
*   4   2  1958     672.   *     6   1967       765.     .1579   *
*   2  16  1959     340.   *     7   1974       713.     .1842   *
*   2   8  1960     139.   *     8   1982       691.     .2105   *
*  11  25  1960      45.   *     9   1978       683.     .2368   *
*   3   5  1962     365.   *    10   1958       672.     .2632   *
*   1  31  1963     641.   *    11   1963       641.     .2895   *
*   1  20  1964     223.   *    12   1980       594.     .3158   *
*   1   5  1965     219.   *    13   1971       576.     .3421   *
*  12  28  1965     311.   *    14   1953       535.     .3684   *
*   1  24  1967     765.   *    15   1968       490.     .3947   *
*   1  30  1968     490.   *    16   1975       405.     .4211   *
*   1  26  1969     792.   *    17   1988       405.     .4474   *
*   3   4  1970     363.   *    18   1987       388.     .4737   *
*  12  20  1970     576.   *    19   1962       365.     .5000   *
*  12  21  1971     246.   *    20   1970       363.     .5263   *
*   2  27  1973    1200.   *    21   1959       340.     .5526   *
*   1   3  1974     713.   *    22   1966       311.     .5789   *
*   3  21  1975     405.   *    23   1979       305.     .6053   *
*  10  10  1975      81.   *    24   1984       286.     .6316   *
*   1   2  1977     114.   *    25   1972       246.     .6579   *
*   1  16  1978     683.   *    26   1964       223.     .6842   *
*   1  14  1979     305.   *    27   1965       219.     .7105   *
*   2  19  1980     594.   *    28   1985       197.     .7368   *
*   1  27  1981     133.   *    29   1955       170.     .7632   *
*   3  31  1982     691.   *    30   1960       139.     .7895   *
*   1  21  1983    1500.   *    31   1981       133.     .8158   *
*  12  11  1983     286.   *    32   1977       114.     .8421   *
*   2   8  1985     197.   *    33   1976        81.     .8684   *
*   2  18  1986    1030.   *    34   1989        77.     .8947   *
*   2  13  1987     388.   *    35   1961        45.     .9211   *
*   1  17  1988     405.   *    36   1957        28.     .9474   *
*  11  23  1988      77.   *    37   1954        26.     .9737   *
********************************************************************
```

```
-OUTLIER TESTS  -
------------------------------------------------------------------
LOW OUTLIER TEST
----------------

BASED ON  37 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.650

      0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF     22.2

-----------------
HIGH OUTLIER TEST
-----------------

BASED ON  37 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.650

      0 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF    4358.

------------------------------------------------------------------


-SKEW WEIGHTING -
------------------------------------------------------------------
BASED ON  37 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW =   .219
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW =   .130
------------------------------------------------------------------



 FINAL RESULTS
-FREQUENCY CURVE-  1660
*******************************************************************
*........FLOW,CFS........*             *...CONFIDENCE LIMITS...*
*             EXPECTED   * EXCEEDANCE  *                        *
*  COMPUTED  PROBABILITY * PROBABILITY *  .05 LIMIT  .95 LIMIT *
*------------------------*-------------*------------------------*
*     2700.      3010.   *    .002     *     4910.      1750.  *
*     2320.      2540.   *    .005     *     4090.      1540.  *
*     2020.      2190.   *    .010     *     3470.      1370.  *
*     1730.      1840.   *    .020     *     2870.      1190.  *
*     1430.      1500.   *    .040     *     2280.      1000.  *
*     1030.      1060.   *    .100     *     1550.       747.  *
*      730.       743.   *    .200     *     1040.       546.  *
*      343.       343.   *    .500     *      454.       262.  *
*      140.       137.   *    .800     *      187.        99.  *
*       83.        78.   *    .900     *      115.        54.  *
*       52.        48.   *    .950     *       76.        31.  *
*       20.        16.   *    .990     *       33.        10.  *
*+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++*
*   FREQUENCY CURVE STATISTICS    *     STATISTICS BASED ON     *
*---------------------------------*-----------------------------*
*  MEAN LOGARITHM          2.4926 *  HISTORIC EVENTS          0 *
*  STANDARD DEVIATION       .4327 *  HIGH OUTLIERS        0     *
*  COMPUTED SKEW           -.8983 *  LOW OUTLIERS         0     *
*  GENERALIZED SKEW        -.4000 *  ZERO OR MISSING      0     *
*  ADOPTED SKEW            -.6000 *  SYSTEMATIC EVENTS       37 *
*****************************************************************


++++++++++

END OF RUN
```

```
**TITLE CARD(S)**
TT   Matadero creek (USGS #1660) LOG PEARSON TYPE 3 ANALYSIS
TT
TT   C.E. NAHN 4/18/89

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   1660    .130    -.60

**SYSTEMATIC EVENTS**
     37 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++


 FINAL RESULTS
-PLOTTING POSITIONS-  1660
******************************************************************
*.....EVENTS ANALYZED......*...........ORDERED EVENTS..........*
*                          *          WATER                WEIBULL  *
* MON DAY  YEAR  FLOW,CFS  *   RANK  YEAR     FLOW,CFS   PLOT POS *
*-----------------wy-------*-------------------------------------*
*  12   6  1952 1953  535.  *     1   1983      1500.     .0263   *
*   3  19  1954  54    26.  *     2   1973      1200.     .0526   *
*   1  18  1955  55   170.  *     3   1986      1030.     .0789   *
*  12  22  1955  56   854.  *     4   1956       854.     .1053   *
*   2  24  1957  57    28.  *     5   1969       792.     .1316   *
*   4   2  1958  58   672.  *     6   1967       765.     .1579   *
*   2  16  1959  59   340.  *     7   1974       713.     .1842   *
*   2   8  1960  60   139.  *     8   1982       691.     .2105   *
*  11  25  1960  61    45.  *     9   1978       683.     .2368   *
*   3   5  1962  62   365.  *    10   1958       672.     .2632   *
*   1  31  1963  63   641.  *    11   1963       641.     .2895   *
*   1  20  1964  64   223.  *    12   1980       594.     .3158   *
*   1   5  1965  65   219.  *    13   1971       576.     .3421   *
*  12  28  1965  66   311.  *    14   1953       535.     .3684   *
*   1  24  1967  67   765.  *    15   1968       490.     .3947   *
*   1  30  1968  68   490.  *    16   1975       405.     .4211   *
*   1  26  1969  69   792.  *    17   1988       405.     .4474   *
*   3   4  1970  70   363.  *    18   1987       388.     .4737   *
*  12  20  1970  71   576.  *    19   1962       365.     .5000   *
*  12  21  1971  72   246.  *    20   1970       363.     .5263   *
*   2  27  1973  73  1200.  *    21   1959       340.     .5526   *
*   1   3  1974  74   713.  *    22   1966       311.     .5789   *
*   3  21  1975  75   405.  *    23   1979       305.     .6053   *
*  10  10  1975  76    81.  *    24   1984       286.     .6316   *
*   1   2  1977  77   114.  *    25   1972       246.     .6579   *
*   1  16  1978  78   683.  *    26   1964       223.     .6842   *
*   1  14  1979  79   305.  *    27   1965       219.     .7105   *
*   2  19  1980  80   594.  *    28   1985       197.     .7368   *
*   1  27  1981  81   133.  *    29   1955       170.     .7632   *
*   3  31  1982  82   691.  *    30   1960       139.     .7895   *
*   1  21  1983  83  1500.  *    31   1981       133.     .8158   *
*  12  11  1983  84   286.  *    32   1977       114.     .8421   *
*   2   8  1985  85   197.  *    33   1976        81.     .8684   *
*   2  18  1986  86  1030.  *    34   1989*       77.     .8947   *
*   2  13  1987  87   388.  *    35   1961        45.     .9211   *
*   1  17  1988  88   405.  *    36   1957        28.     .9474   *
*  11  23  1988  89    77.  *    37   1954        26.     .9737   *
******************************************************************
```

```
 -OUTLIER TESTS  -
-----------------------------------------------------------------
LOW OUTLIER TEST
----------------

BASED ON  37 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.650

       0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF     22.2


-----------------
HIGH OUTLIER TEST
-----------------

BASED ON  37 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.650

      0 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF    4358.

-----------------------------------------------------------------


-SKEW WEIGHTING -
-----------------------------------------------------------------
BASED ON  37 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW =   .219
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW =   .130
-----------------------------------------------------------------


 FINAL RESULTS
-FREQUENCY CURVE-  1660
*****************************************************************
*........FLOW,CFS........*             *...CONFIDENCE LIMITS...*
*             EXPECTED    * EXCEEDANCE  *                       *
*  COMPUTED  PROBABILITY * PROBABILITY *   .05 LIMIT  .95 LIMIT *
*-------------------------*-------------*-----------------------*
*     2410.       2650.   *     .002    *     4290.      1590.  *
*     2120.       2290.   *     .005    *     3670.      1420.  *
*     1880.       2010.   *     .010    *     3180.      1280.  *
*     1630.       1720.   *     .020    *     2680.      1130.  *
*     1370.       1430.   *     .040    *     2180.       967.  *
*     1010.       1040.   *     .100    *     1520.       736.  *
*      730.        742.   *     .200    *     1040.       546.. *
*      349.        349.   *     .500    *      462.       266.  *
*      141.        138.   *     .800    *      188.       100.  *
*       82.         78.   *     .900    *      115.        53.  *
*       51.         46.   *     .950    *       75.        30.  *
*       19.         15.   *     .990    *       31.         9.  *
*+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++*
*   FREQUENCY CURVE STATISTICS     *     STATISTICS BASED ON    *
*----------------------------------*----------------------------*
*  MEAN LOGARITHM          2.4926  *  HISTORIC EVENTS        0  *
*  STANDARD DEVIATION       .4327  *  HIGH OUTLIERS      0      *
*  COMPUTED SKEW          -.8983  *  LOW OUTLIERS       0      *
*  GENERALIZED SKEW       -.6000  *  ZERO OR MISSING    0      *
*  ADOPTED SKEW           -.7000  *  SYSTEMATIC EVENTS     37  *
*****************************************************************


++++++++++

END OF RUN
```

APPENDIX J

SANTA CLARA VALLEY WATER DISTRICT
ORDINANCE 83-2
(As Amended October 22, 1985)

Santa Clara Valley Water District

ORDINANCE 83-2

Repealing Ordinance 74-1

AS AMENDED 10/11/85

AN ORDINANCE OF SANTA CLARA VALLEY WATER DISTRICT
DEFINING LIMITS OF FLOOD CONTROL RESPONSIBILITY;
PROVIDING FOR MAINTENANCE OF WATERCOURSES;
FOR JOINT USE OF PROJECTS, AND FOR DEDICATIONS;
PROHIBITING POLLUTION OF DISTRICT WATER SUPPLIES
AND INJURY TO DISTRICT PROJECTS, AS DEFINED,
AND ENCROACHMENT UPON OR INTERFERENCE WITH
WATERCOURSES EXCEPT BY PERMIT;
PROVIDING PENALTIES FOR VIOLATION HEREOF;
AND REPEALING ORDINANCE 74-1

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118
Telephone: (408) 265-2600

The Board of Directors of Santa Clara Valley Water District do ordain as follows:

SECTION 1: INTENT

It is the intent of this Ordinance to secure the health, safety and welfare of the people of the District by prudent floodplain management, by protecting the quality of District water supplies, and by securing maintenance of watercourses and prohibiting injury to District property and projects and harmful amendment of watercourses.

It is further the intent of this Ordinance to provide a definition of the general limits of watercourses on which the District may request rights of way for flood control purposes and construction of flood control facilities.

It is further the intent of this Ordinance to insure that the repeal of Ordinance 74-1, accomplished hereby, shall not affect permits heretofore given and rights of every nature heretofore established pursuant to said Ordinance 74-1.

SECTION 2: DEFINITIONS

2.1 "Bank or Banks of a Watercourse" means the sides of a watercourse the top of which shall be the topographic line roughly parallel to stream center line where the side slopes intersect the plane of ground traversed by the watercourse. Where banks do not distinguishably end, the surrounding country being extensions of the banks, the top of such banks shall be as determined by the District.

2.2 "Board" means the Board of Directors of the Santa Clara Valley Water District.

2.3 "Design Flood" means the selected flood against which protection is provided, or eventually will be provided, by means of flood protective or control works.

2.4 "Designated Floodway" means the channel of a stream and that portion of the adjoining floodplain required reasonably to provide for passage of the design flood.

2.5 "District" means Santa Clara Valley Water District.

2.6 "District Project" means any facility, structure or improvement of the District including, without limitation, lands, facilities, structures or improvements and appurtenances thereto owned or controlled by the District for water conservation, water utility, flood control or any lawful District purpose.

2.7 "Levee" means an elongated embankment constructed where required to contain flooding.

2.8 "Pollution" means impairment of water quality to a degree which adversely and unreasonably affects a beneficial use of the water.

2.9 "Structure" means anything made or constructed and having its foundation or support upon or within the ground.

2.10 "Watercourse" means an elongated channel or depression, whether natural or man-made, in which water does or may flow and may include the overflow area, if any, of such channel or depression. For the purposes of this Ordinance "watercourse" includes such channels or depressions, although the same may be by reason of size of area drained not deemed to be a flood control facility.

SECTION 3: MAINTENANCE BY OWNER

Every owner of a watercourse whether a person, firm, corporation, or governmental agency, or such owner's lessee or tenant, shall keep and maintain the same in a condition which will not contribute to pollution as prohibited by Section 6.1 hereof and which will not unreasonably change or retard the flow of the water; and every owner of a structure within or directly affecting a watercourse shall maintain the safe condition and function of the same.

SECTION 4: DISCHARGE OF DRAINAGE

The County of Santa Clara, any municipality and any agency or person within the District, shall have the right to discharge drainage water of nonpolluting quality directly into watercourses, except water supply canals and percolation facilities, of the District subject only to the approval procedure set forth in this Ordinance.

SECTION 5: FLOOD CONTROL RESPONSIBILITY

5.1 The responsibility of this District for the control of flood and storm water is an obligation to make efficient use of its funds in the areas of study, planning and acquisition and to act lawfully in designing, constructing and maintaining such works as the Board shall approve. The responsibility of the District does not and cannot extend to an affirmative obligation to take specific measures of any nature not mandated by governing legislation or judicial order. This Ordinance may not be deemed an imposition of a duty upon the District other than as specified above and no assertion of public liability shall be based thereon. Nothing in this Ordinance shall be deemed to be or construed as a warranty or assurance that flooding and flood damage will not or cannot occur anywhere in the District. However, the District will provide flood control service in an emergency to the extent of its resources and ability. The District accepts an obligation to design, construct and maintain its works in such manner as to avoid or minimize harmful disturbance of the natural environment.

5.2 Construction and maintenance, or acceptance and maintenance, of flood control works and control of flood and storm waters by the District shall be subject to the following:

a. The District will so act in a reach or portion of a watercourse only if it has sufficient legal title or right of way therein.

b. Artificial channels of any kind, regardless of the size of tributary watershed, are excluded from District responsibility unless the same are constructed by the District or are approved and adopted by the Board.

c. A reach or portion of a natural watercourse will not be deemed within District flood control jurisdiction unless the tributary watershed area upstream of such reach or portion is in excess of 320 acres (one-half square mile); provided, that such area may be either greater or less than 320 acres pursuant to agreement with the city or county having jurisdiction.

5.3 A watercourse or reach or portion thereof over which the District is not deemed to have flood control jurisdiction by reason of the exclusions specified in Subparagraphs B and C of Section 5.2 above is deemed a local drainage facility.

5.4 Flood control facilities serving a watershed area of 320 acres (one-half square mile or more) shall have a design capacity to convey safely the one percent flood ("100-year flood") plus freeboard. The standard, however, may be lowered to be consistent with land use designations of city or county land use master plans. Freeboard design criteria shall be established by the District based upon accepted engineering practices.

5.5 Storm water drainage facilities serving a watershed area less than 320 acres (one-half square mile) and qualifying under agreement per paragraph 5.2 C shall have a design capacity to convey the ten percent flood ("10-year flood") plus freeboard. Freeboard design criteria shall be established by the District based upon accepted engineering practices. The storm water drainage facilities referred to in this section are the major collectors and are not deemed to include storm sewers used to drain urban developed sites. The design of storm sewers rests with the local agency having jurisdiction of the urban development served. In drainage areas less than 320 acres, where urban development exists or may occur, the drainage facilities should be designed to provide for the conveyance or detention of the flood flows in excess of the ten percent flood up to the one percent flood in the streets or open space areas so that development is not subject to flooding by such excess flood flows. Otherwise, the structures must be flood-proofed, as prescribed by Federal Emergency Management Agency regulations, or the storm water drainage facility must be designed as provided in Section 5.4 above.

SECTION 6: PROHIBITIONS

6.1 The pollution of the water supplies of the District, whether in surface streams, reservoirs or conduits of any kind, or of groundwater, by any direct or indirect means whatever, including the deposit of polluting matter of any kind upon the banks of a watercourse, lake or reservoir where the same may reach or affect such water supplies, and including the discharge of polluting storm waters or sanitary sewage, is prohibited.

6.2 Without having first secured a permit pursuant to Section 7 hereof, or other written approval from the District, it shall be unlawful after the effective date of this Ordinance for any person, firm, corporation, the County of Santa Clara, the Government of the United States and agencies thereof, the Government of the State of California and agencies thereof, or any municipal corporation or district to do or cause to be done any of the following:

a. Construct or place any structure or perform any grading within a designated floodway between the banks of a watercourse, or within 50 feet of the top of such banks.

b. Construct, place or maintain any structure or perform any grading upon a levee or on a District project.

c. Excavate within a designated floodway, upon a levee, or upon or between the banks of a watercourse or District project.

d. Deposit material of any kind within a designated floodway, upon a levee, or District project, or upon or within the banks of a watercourse.

e. Construct or place any outlet for discharging drainage waters within a designated floodway, upon or within the banks of a watercourse, or District project.

f. Plant any form of flora upon or within the banks of a watercourse or a District project.

g. Trespass in any manner whatsoever including the driving of vehicles on any property in which the District owns a fee simple interest or on which the District owns an exclusive easement for flood control, drainage or water conservation or distribution purposes, except such areas as have been opened to and developed for public recreational or other use.

6.3 Permits shall not be withheld upon unreasonable or insubstantial grounds.

SECTION 7: PERMIT PROCEDURE

7.1 Any person, firm, corporation or public agency, except those filing maps pursuant to the State Subdivision Map Act or local ordinances adopted pursuant thereto, desiring to do any of the acts for which a permit is required pursuant to this Ordinance shall make application for such permit to the District. Said applications shall contain such information as the District shall reasonably require.

7.2 Any public agency, or any person, firm or corporation filing a map pursuant to the State Subdivision Map Act or local ordinance adopted pursuant thereto, desiring to do any of the acts for which a permit is required pursuant to this ordinance shall, in lieu of the application procedure set forth above, submit engineered improvement plans to the District.

7.3 Upon receipt of such application for permit or engineered improvement plans or additional information as herein set forth, the District shall make such investigations as are necessary to determine, among other things, whether or not the proposed work or activities intended will impede, restrict, retard, pollute, change the direction of the flow of water, catch or collect debris carried by such water, is located where natural flow of the storm and flood waters will damage or carry any structure or any part thereof downstream, or will damage, weaken, erode, or reduce the effectiveness of the banks to withhold storm and flood waters, to resist erosion and siltation and entry of pollutants and contaminants, or interfere with maintenance responsibility or with structures placed or erected for flood control, water conservation or distribution. In order to make said investigation, the District may return said application or improvement plans to the applicant for additional information as may be required to complete the investigation. After investigation the District shall approve, approve conditionally, or disapprove the application or improvement plans on the basis of such investigation. If a permit is granted, it shall state the conditions subject to which it is granted.

7.4 Within fifteen (15) days of District receipt of such application for permit or engineered improvement plans or additional information, the District shall respond, acknowledging the same and advising the applicant of any reason beyond the District's control why action thereon cannot be taken within thirty (30) days of said District receipt. Where no such notification of anticipated delay and the reason therefor is given by the District, the District shall act upon every application for permit, or engineered improvement plans or additional information within thirty (30) days of its receipt.

7.5 In the event an applicant is aggrieved by the action of the District, or by reason of the requirements of this Ordinance, the applicant may within fifteen (15) days from date of decision of the District, make an appeal in writing to the Board. The Clerk of said Board shall set a time for hearing on such appeal within three (3) weeks from the date of receipt of said appeal, and shall mail or deliver notification to the appellant of said date at least two (2) weeks prior to the date so set. The appellant may waive such notification and seek a hearing at the next meeting of the Board. At the hearing of such appeal, it will be incumbent upon the appellant to show to the satisfaction of the Board that the work or activities so proposed will not violate Section 7.3 of this Ordinance.

7.6 The permit, when issued, shall constitute authority for the applicant to proceed according to the conditions of the permit, except as to that work for which other permits are required by the County of Santa Clara or the city in which the property on which the work is to be performed is located, and as to that work for which other permits are required, such permits must be obtained from that agency and the permit granted pursuant to the terms of this Ordinance *shall* not be effective *until* such other permits have been obtained. It shall be the responsibility of applicant to determine the need for such other permits.

All work for which a permit is required shall be subject to administrative regulation, such as notice by permittee of time of beginning of work, as may be necessary to insure complete inspection during all phases or stages of such work.

If the work is not done in accordance with the terms of the permit, and the instructions of the Inspector, then the permittee shall be considered to have violated the terms of this Ordinance. Upon completion of the work in compliance with the permit, the District shall execute a Notice of Completion and, upon the request of the applicant, shall supply applicant with a copy thereof.

7.7 The Board may by resolution establish a schedule of fees payable upon application for permit hereunder.

7.8 Violation of the provisions of this Ordinance and any failure to satisfy the terms of a permit issued thereunder is a misdemeanor. The violation shall be punishable by a fine not exceeding five hundred dollars ($500), or imprisonment in the County Jail not to exceed thirty (30) days, or both that fine and that imprisonment. Any violation or threatened violation may also be enjoined by civil action. As an additional remedy to such violations and if essential to the health, welfare, or safety of the general public, the Board may order the work to be done, excavation replaced, material removed, or may order any construction or structures placed contrary to the terms of this Ordinance removed by the District, which work must be paid for by the violator.

7.9 Anything hereinabove stated notwithstanding, a permit under this Ordinance IS NOT REQUIRED unless the subject reach or portion of a watercourse is one having a tributary watershed in excess of 320 acres or is one which is brought under permit procedures pursuant to agreement with the city or county having jurisdiction pursuant to 5.2 C.

SECTION 8: JOINT USE

The use of District projects jointly with a public agency, subject to conditions established by resolution of the Board, is favored wherever such joint use is possible and conformable to the District's public duty.

SECTION 9: REQUEST FOR DEDICATIONS AND CONSTRUCTION

In order to permit the provision of flood control services by the District, the District will request wherever equitable and appropriate, that the city or the county having jurisdiction secure flood control dedications to the District from landowners seeking a change of land use. Where equitable and appropriate, the District may also request that the city or the county having jurisdiction secure from such landowners construction of flood control measures as determined by the District. Such requests shall be pursuant to and in accordance with the master plans, ordinances, resolutions, procedures and conditions established by such city or county.

SECTION 10: VALIDITY

Should any section or provision of this Ordinance be found to be unconstitutional or invalid, such decision shall not affect the validity of the Ordinance as a whole or any part thereof, other than the part decided to be ununconstitutional or invalid.

SECTION 11: ORDINANCE 74-1 REPEALED

Ordinance 74-1 of this District is hereby repealed; provided, that permits heretofore given and rights of every nature heretofore acquired under said Ordinance 74-1 shall remain unaffected.

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District on July 26, 1983 by the following vote:

AYES: Directors—P. T. Ferraro, A. H. Fisher, J. Pandit, S. Sanchez

NOES: Directors—None

ABSENT: Directors—J. Donohue, R. W. Gross, J. J. Lenihan

SANTA CLARA VALLEY WATER DISTRICT

By: SIG SANCHEZ, Chairman Board of Directors

ATTEST:
SUSAN A. EKSTRAND
Clerk of said Board of Directors

09367 (06/93)

APPENDIX K

SANTA CLARA VALLEY WATER DISTRICT BRIDGE CONSTRUCTION COST SHARING POLICY

SUBJECT: BRIDGE CONSTRUCTION—COST SHARING (Res. 76-39)

I. TITLE

Resolution No. 76-39 Adopting Joint Guidelines of the City of San Jose and the Santa Clara Valley Water District for the Planning, Design, and Construction of Bridges

II. BACKGROUND*

The District and the City of San Jose have jointly adopted a set of Guidelines for sharing the cost of planning, design, and construction of bridges within the City. These Guidelines also serve as a model for sharing costs of construction of bridges in other cities and the County. The Resolution was approved by the Board on March 23, 1976.

III. POLICY

The Agreement between the City of San Jose and the Santa Clara Valley Water District bridge cost-sharing agreement sets forth the criteria for cost-sharing of the total cost of bridges over waterways.

The policy is summarized in the attached copy of an agenda report to the Board dated May 24, 1983. The full policy (Res. 76-39) is also attached.

---

*Cross Reference: Appendix A of the Guidelines, "Recommended Creek Parkchain Policies," is the subject of Policy 1-410.

AGENDA MEMORANDUM

AGENDA DATE 5/24/83 ITEM NO. ______ UNIT Flood Control

ZONE District PROJECT NO. 8006 NAME ______

SUBJECT: Report on Existing Joint Guidelines of the City of San Jose and the District for the Planning, Design and Construction of Bridges (Resolution No. 76-39).

EXPLANATION:

Resolution No. 76-39 (copy attached) established criteria for cost-sharing between the City of San Jose and the District for the total cost of bridges over waterways summarized as follows:

1. The City bears all costs of new bridges over existing waterways where there is no existing bridge;
2. The District bears all costs of new additional bridges when required because of the District's proposing a new or relocated waterway;
3. The District bears all costs of bridge replacement or modification where the District's proposed project creates the need for those bridges and the existing bridge meets transportation standards;
4. The City bears all costs of bridge replacement or modification where the existing waterway opening is adequate;
5. The City and the District share costs of bridge replacements or modifications where the existing bridge does not meet transportation standards and does not have an adequate waterway opening. This cost-sharing is triggered by either a District or a City proposed project. The Joint Guidelines further provide a cost-sharing formula based only on roadway widths. Basically, the District's responsibility is for replacement of the existing traffic lanes and half the shoulders, sidewalks, curbs and railings (see attached sketch for further explanation).

These guidelines are used by staff in preparing actual cost-sharing agreements for each instance which are submitted to the Board and the City Council.

Recent experience in implementation of the Guidelines seem to favor the City more often than the District, at least in certain circumstances. The major areas of concern are:

1. Where funds are provided by third parties (usually the State or the Federal government), only the agency receiving said funds benefits therefrom. In all recent cases, this has been the City. The Guidelines actually allow for the City to profit from these instances.

(Continued)

RECOMMENDATION:

SUBJECT: Report on Existing Joint Guidelines of the City of San Jose and the District for the Planning, Design and Construction of Bridges (Resolution No. 76-39).

Possible revisions to the Guidelines to accommodate this concern are:

A. Modify the cost-sharing formula to insure that neither the District nor the City profits from a third party funding. That is, when the City receives Federal funds, the District's share would be limited to the lesser of the amount established by the cost-sharing formula in the Guidelines or the total cost minus the Federal share. For example, if the City were to acquire $1.2 million Federal funds for a $2.0 million bridge and the formula provides for a 50-50 cost-sharing, the District would pay no more than $800,000 instead of $1.0 million provided by the cost-sharing formula. It is noted that staff has already been insisting that this type of provision be included in recent agreements now being formulated.

B. Modify the cost-sharing formula to specify that both agencies share in the revenue from the third party. That is, first subtract the third party funding from the total cost and then apply the formula. In the above example, the District's share would be reduced to $400,000 - 1/2 x ($2,000,000 - 1,200,000). The rationale behind not placing this requirement in the Guidelines was that each agency would be the recipient of various types of outside funding and that it would even out in the long run. Also, there was some concern about the legality of sharing Federal funds with another agency. However, currently the major possible funding source for the District in this category is the State subvention program on Federal Soil Conservation Service and Corps of Engineers projects.

2. The formula seems to penalize the District in the case where the channel waterway is of suffucient width but the existing/replacement bridge must be raised. For instance, the City is currently proposing to replace the existing Fontanoso Avenue bridge over Coyote Creek. The existing bridge at this location needs to be raised about 4 feet to accommodate flood flows. Under the Guidelines, the District's share of the $2.0 million total cost of this bridge replacement would be about $800,000. Similarly, the City has requested that the District expend $550,000 towards construction of the McKean Road bridge over Alamitos Creek for a 3-foot raising.

Staff has discussed various possible revisions to this part of the Guidelines with the City of San Jose.

The rationale behind including only widths in the formula was that since the District has responsibility for replacing substandard existing roadway widths with acceptable widths, the entire cost-sharing formula could be simplified by sharing total cost on the basis of respective widths.

Also attached are copies of the material Director Pandit brought to the Board's attention at the meeting of January 25, 1983 along with the full text of Resolution No. 76-39.

RESOLUTION NO. 76-39

ADOPTING JOINT GUIDELINES OF THE
CITY OF SAN JOSE AND THE
SANTA CLARA VALLEY WATER DISTRICT FOR THE
PLANNING, DESIGN, AND CONSTRUCTION OF BRIDGES

RESOLVED, by the Board of Directors of Santa Clara Valley Water District that the within and foregoing

CITY OF SAN JOSE-
SANTA CLARA VALLEY WATER DISTRICT
JOINT GUIDELINES FOR THE PLANNING,
DESIGN, AND CONSTRUCTION OF BRIDGES

shall be approved and hereby adopted; and that, from and after approval and adoption thereof by the said City of San Jose by appropriate Council Resolution, the same shall apply to and govern this District in all matters and relationships therein specified.

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District on [illegible] by the following vote:

AYES: Directors [illegible]
[illegible]
NOES: Directors NONE
ABSENT: Directors NONE

SANTA CLARA VALLEY WATER DISTRICT

By: ______________________
Chairman of the Board of Directors

ATTEST: VIOLET V. ENANDER

____
Clerk of said Board of Directors

SUBJECT: BRIDGE CONSTRUCTION—COST SHARING (Res. 76-39)

JOINT GUIDELINES OF THE CITY OF SAN JOSE AND THE SANTA CLARA VALLEY WATER DISTRICT FOR THE PLANNING, DESIGN, AND CONSTRUCTION OF BRIDGES

March 23, 1976

INTRODUCTION

The City of San Jose through its roadway construction and improvement program, and the Santa Clara Valley Water District through its program of construction and improvement of flood control works, frequently require the planning, design, construction, reconstruction and maintenance of bridges. Because of varying needs, priorities and funding capabilities of highway and flood control programs, accomplishment of all City and District projects in the same area and at the same time is not always practical. Nevertheless, bridges are of special importance to each program and therefore, require close coordination to assure that both trafficway and floodway capacities, consistent with accepted standards, are provided.

It is the objective of both agencies to achieve overall public economy and to avoid wasteful future work or replacement of bridges wherever practicable. Accordingly, these guidelines establish responsibilities and financial obligations of the City of San Jose and the Santa Clara Valley Water District relative to bridge projects initiated by either agency.

POLICY PROVISIONS

I. General

The term "bridge" shall mean any structure or conduit required to be constructed for the purpose of conveying floodwaters under a public roadway and permitting at the same time the safe passage of vehicular and pedestrian traffic along the roadway.

Because bridges are expensive and are, in general, detrimental to the passage of flood flows, it is desirable to minimize the number of bridges and to provide advanced transportation planning in all areas subject to flood control channel modification.

Advanced transportation planning is important for all stream crossings and particularly critical in the case of natural floodplains and modified floodplain channels. Accordingly, street systems should be developed in conformance with "Recommended Creek Parkchain Policies" (Appendix "A" attached hereto), adopted in April 1973, by the City and the District and "Policy No. 8-3" (Appendix "B" attached hereto), adopted June 1973, by the City, or as such documents are mutually amended.

Furthermore, it is important that all stream crossings be constructed to span a channel section adequate to convey the design flood flow. The channel section established by the District may be any type from a full structural section to a modified or natural floodplain. Some obstruction of the waterway, if carefully limited, can be tolerated in the shallow-flow low-velocity areas such as along the edges of a trapezoidal channel or a floodplain.

Where the transportation standards established by the City allow, low flow crossings (fords) may be utilized. This type of crossing is normally used on minor roads where continuous service is not required. Such crossings are available for most of the year and may represent a lesser capital investment than bridges.

II. Design Standards

All bridge construction, including fords, bridge reconstruction or bridge improvement projects undertaken by either the City or the District shall result in full compliance with transportation standards established by the City and with flood control standards established by the District. These are summarized as follows:

A. Bridge span, waterway opening, and other hydraulic criteria shall conform to accepted engineering practice and shall be based on the proposed channel section adequate to convey the design flood flow as prescribed by the District.

B. Overland surface drainage release points of adjacent roadways will be maintained or improved and must be provided for as part of any bridge project.

C. Roadway width and related transportation criteria shall conform to minimum urban or rural standards as described below.

D. Any bridge betterments above said standards prescribed by either agency shall be made solely at the expense of that agency.

For the purpose of establishing the minimum width bridge to be constructed and funded in accordance with these guidelines, the following standards will be used:

Urban Standards

Roadway widths under urban standards will be that of the existing facility unless such widths are less than 12 feet per lane with at least 6-foot shoulders on each side. In that case, the roadway width will be the number of lanes times 12 feet plus 6-foot shoulders and safety curbs and railings. In addition, the bridge would include sidewalks to the extent they were part of the bridge to be replaced or modified.

SUBJECT: BRIDGE CONSTRUCTION—COST SHARING (Res. 76-39)

Rural Standards

Roadway widths under rural standards will be that of the existing facility unless such widths are less than 12 feet per lane with at least 2-foot wide shoulders on each side. In that case, the roadway width will be the number of lanes times 12 feet plus two 2-foot wide shoulders and safety curbs and railings. In addition, the bridge would include sidewalks to the extent they were part of the bridge to be replaced or modified.

Distinction as to the areas which are urban vs. rural will be based upon the City of San Jose's Urban Development Policy adopted by the City Council on October 19, 1970, and as revised in November 1974, (Exhibit "C"—Urban Service Area Boundary, attached hereto), or as may be amended by the City.

III. Cost Allocation

A. When the City proposes construction of a new bridge over a waterway where there is no existing bridge, all costs are to be borne by the City.

B. When the District proposes construction of a new or relocated waterway which creates the need to construct a both new and additional bridge to cross existing City streets, all costs to construct such a bridge to rural or urban standards are to be borne by the District.

C. When an existing bridge structure conforms to adopted transportation standards, but a current District project requires an increase in the waterway opening, all costs to construct such bridge to rural or urban standards are to be borne by the District.

D. When an existing bridge structure provides adequate waterway opening to conform with adopted flood control standards, but a current City project requires improvements to the transportation or pedestrian features of the structure, all costs are to be borne by the City.

E. When an existing bridge is not in conformity with either adopted transportation or flood control standards, the cost of bridge improvement resulting either from a project of the City or a project of the District shall be allocated between the two agencies on a percentage basis computed by dividing the width assigned to each agency by the total extended width of the new bridge structure measured perpendicular to the trafficway. Twin bridges used at one street crossing will be adopted together and considered as one bridge.

The total cost of the bridge project includes the cost of construction, utility relocation, rights of way, engineering, and inspection. The bridge project herein considered for cost-sharing shall include the bridge structure plus only that traffic and floodway work, and rights of way, located within the designated limits mutually established for each project. Necessary project rights of way, in addition to those under existing ownership, shall be acquired by the

SUBJECT: BRIDGE CONSTRUCTION—COST SHARING (Res. 76-39)

constructing agency and included in the project cost. Rights of way previously acquired by either agency shall be made available to the project at no cost.

The width of bridge assigned to each agency shall be determined as follows:

1. *Urban Bridges—District Share of Width (in feet)*
   a. The existing width of roadway, including shoulders, or, the number of existing traffic lanes times 12 feet and a 6-foot shoulder, whichever is greater.
   b. One-half of the total existing sidewalk widths.
   c. One-half of the total width of safety curbs and railings.
2. *Urban Bridges—City Share of Width (in feet)*
   a. All roadway and shoulder width in excess of District responsibility as prescribed in E-1.a above.
   b. All sidewalk width in excess of one-half the total existing sidewalk widths.
   c. One-half of the total width of safety curbs and railings.
3. *Rural Bridges—District Share of Width (in feet)*
   a. The existing width of roadway, including shoulders, or, the number of existing traffic lanes times 12 feet and a 2-foot shoulder, whichever is greater.
   b. One-half of the total existing sidewalk widths.
   c. One-half of the total width of safety curbs and railings.
4. *Rural Bridges—City Share of Width (in feet)*
   a. All roadway and shoulder width in excess of District responsibility as prescribed in E-3.a above.
   b. All sidewalk width in excess of one-half the total existing sidewalk widths.
   c. One-half of the total width of safety curbs and railings.

IV. Cost-Sharing Reimbursement

Funds needed for the project will be advanced by the constructing agency. Where costs are to be shared, the agencies will execute an agreement for each project to provide for appropriate reimbursement to the constructing agency within a stated time.

Grants and reimbursements, exclusive of land dedications, from third parties for portions of the bridge cost will be used by the agency to which the grants and reimbursements are given.

V. Right of Way and Responsibility for Structures and Maintenance

Bridges constructed pursuant to Section III, Cost Allocation, shall be subject to the following understandings relative to rights of way and general responsibilities:

A. Rights of way within the designated project limits shall be assigned to provide, where possible, fee ownership to the City for roadway purposes and easement ownership to the District for flood control purposes. Conveyance of rights of way between the City and District within such designated project limits for bridge construction shall be at no cost except as provided for in section III-E herein.

B. The structural integrity of the bridge structure shall be the responsibility of the City. this responsibility includes, where the structure is a bridge, maintaining the structural integrity of the wingwalls, footings, abutments, piers, and deck. When the structure is a single or multibarrel culvert, the entire culvert will be considered part of the structural component of the bridge to be repaired or replaced by the City. Culverts shall mean all box culverts and metal or concrete pipes of any cross-sectional shape.

C. The District will perform all work necessary to maintain the flood carrying capacity of the channel at the bridge or culvert and will protect the bridge or culvert footings, wingwalls, abutments, and piers from damage caused by flood flow. Any channel approaches and slope protection works not a part of the structure will be repaired and maintained by the District.

SUBJECT: BRIDGE CONSTRUCTION—COST SHARING (Res. 76-39)

APPENDIX A **COMMITTEE OF THE WHOLE: 4/26/73**

RECOMMENDED CREEK PARKCHAIN POLICIES

POSITION: By utilization of floodplain concepts the existing creeks which flow through San Jose offer an unusual opportunity to develop a lineal citywide park system which would:

1. extend finger-like park and open space projections into our residential communities and downtown areas;
2. provide environmental experiences and recreation activities not possible in neighborhood and District parks;
3. enable the public to transverse throughout the valley floor by means of hiking, equestrian and bike trails; and
4. allow motorists to have scenic drive experiences within the city by having streets placed along lineal floodplain park chains.

POLICIES:

1. A creek, and its floodplain or modified version thereof, will be considered for inclusion in the park system of the city if it meets at least one of the following conditions:
   a. Provides a unique, natural open space setting after flood control work is completed.
   b. Provides considerable recreation opportunities as the result of a flood control project, although the area may not be a unique natural setting.
   c. Is contiguous to connecting links with other publicly-owned recreation areas, schools, libraries, or community focal points.
   d. Is a part of a citywide hiking and equestrian trail and bike path.
2. The Santa Clara County Flood Control and Water District has already adopted a policy that where physically, financially, and environmentally feasible, the floodplain or modified floodplain (use of levees) concept will be utilized for flood control purposes. The City shall cooperate and support the District in implementation of this policy.

3. The Flood Control District is generally responsible for the acquisition of the "designated floodway"[1] rights of way and the City is generally responsible for the acquisition of additional rights of way needed for park or other purposes. Where urban development is planned in the future, the City should require reservation of the necessary parkland and "designated floodway" acreage. Within the "designated floodway," the developer should be required to dedicate to the Flood Control District the area normally required if a trapezoidal channel were to be used for flood control purposes. The Flood Control District should purchase the remaining "designated floodway" area. The City then should purchase, at fair market value, that area reserved for the park which would be outside of the "designated floodway."

4. Where a flood control improvement is not planned in the immediate future but the City desires to proceed with the acquisition of land for a parkchain along a stream, the City may proceed with such acquisition and the Flood Control District will reimburse, consistent with a mutually satisfactory agreement, the cost of such land acquisition as included in the "designated floodway" when funds are available to the District. Where the flood control improvements are to be installed before the City is ready to use the modified floodplain as a parkchain, the District may proceed with the acquisition of the "designated floodway." The City will reimburse the District the cost of such acquisition of parklands acquired outside the "designated floodway," consistent with a mutually satisfactory agreement.

5. "Designated floodways" not included in the City's park system should be maintained in an aesthetically pleasing manner as open space by the Flood Control District.

6. Whether a "designated floodway" is included in the park system or whether it remains open space under complete operating jurisdiction of the Flood Control District, the standards for landscaping shall be in accordance with a mutually acceptable policy.

---

[1] Definition: A "designated floodway" is the channel of the stream and that portion of the adjoining floodplain as determined by the Flood Control District to be required to reasonably provide for the construction of a flood control project, i.e. 1) a vertical wall concrete channel, 2) an underground pipeline, 3) a lined or unlined trapezoidal channel, 4) a modified floodplain including levees; or even 5) a natural floodplain. In all cases, maintenance access roads are included as part of lands required.

7. The Flood Control District has the responsibility to mitigate any adverse environmental effects, including aesthetics, of structural channel facilities. This could be done by architectural design and landscaping treatment.

8. Where private development is planned adjacent to a "designated floodway" to be used for park and open space purposes, the developer, under the authority of the *Subdivision Map Act*, shall be required to dedicate and improve public street right of way in order to provide:

   a. a logical neighborhood development and circulation pattern;

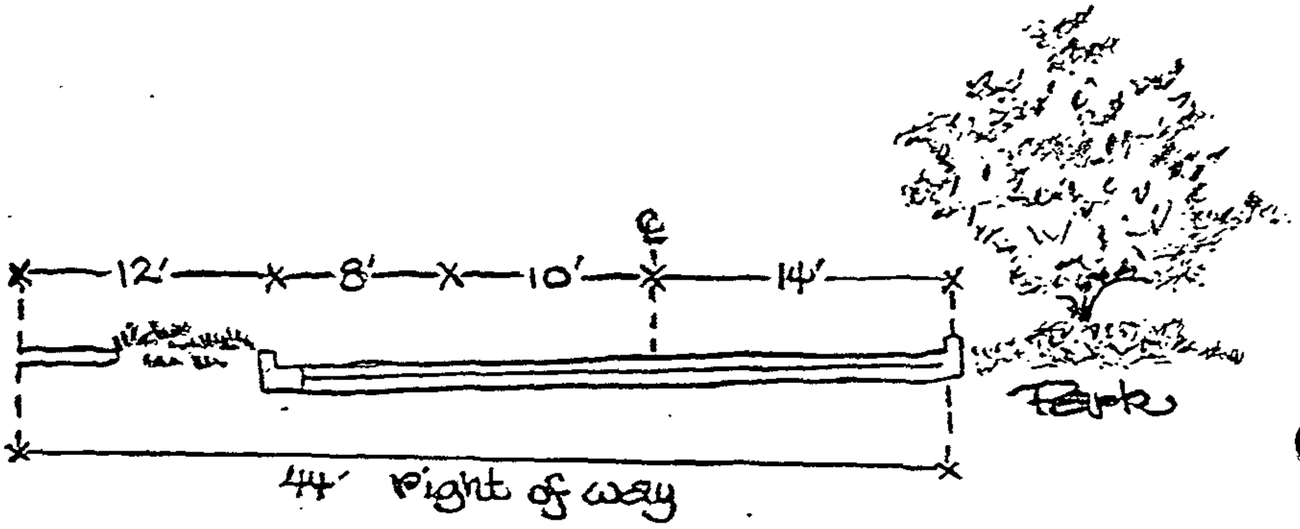
   b. a reasonable separation relationship between the urban usage and park usage;

   c. maximum park exposure along the creek for scenic and security reasons; and

   d. convenient access to the stream for flood control and park maintenance purposes.

   The developer shall be required to dedicate and improve the public right of way in one of two ways:

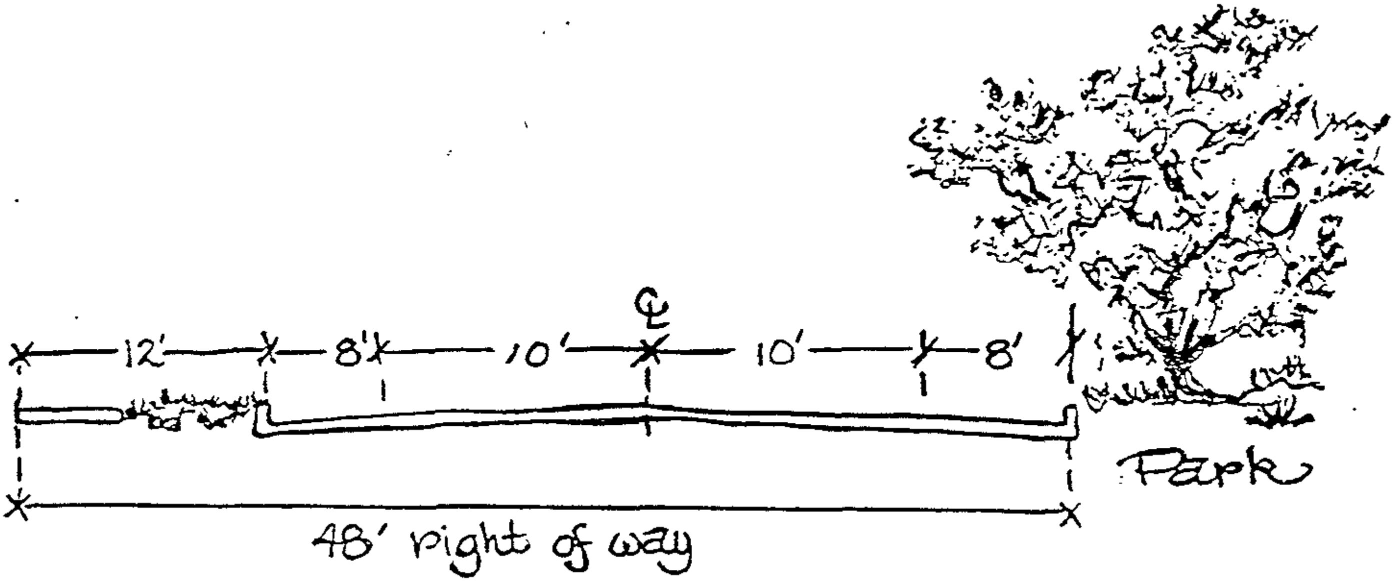
   a. Where the City determines that on-street parking is not required adjacent to a public park, the developer shall dedicate and improve a 44-foot right of way as follows:



SUBJECT: BRIDGE CONSTRUCTION—COST SHARING (Res. 76-39)

This street section is now the City of San Jose right of way standard for frontage roads. There is no provision for on-street parking on the park side, under the assumption that required parking will be provided on-site directly related to recreational activities.

b. Where the City determines that on-street parking is desired, the developer shall dedicate and improve a 40-foot right of way and the City shall improve the remaining 8-foot right of way as follows:



This street section is the City of San Jose standard minor street right of way, excluding one parkway and sidewalk adjacent to the park and provides for parking on both sides of the street.

9. The City is responsible for construction and operation of all trails, paths, and recreation facilities within the flood control right of way so determined to be a part of its park system. Cost of maintenance road enhancement as desired by the City above Flood Control District standards will be paid for by the City.

10. The Flood Control District is responsible for all flood control channel maintenance.

11. The City is to require of contiguous private development, sympathetic design, landscaping, and public access to public areas adjacent to creeks, by means of subdivision approval, site permits, variance, and P.D. permits.

SUBJECT: BRIDGE CONSTRUCTION—COST SHARING (Res. 76-39)

12. The City is responsible to enact effective land use controls by zoning powers, i.e. floodplain zoning districts, in the "designated floodway."

APPENDIX L

DISTRICT POLICY FOR FLOOD CONTROL MAINTENANCE OF PRIVATE PROPERTY

(Engineering Policy 3-330)

ENGINEERING POLICIES & PROCEDURES

Santa Clara Valley Water District

Policy: 3-330
Page: 1 of 1
Date: September 16, 1994
Coordinator: 06230, 07100

SUBJECT: DISTRICT FLOOD CONTROL MAINTENANCE OF PRIVATE PROPERTY

I. TITLE

District Flood Control Maintenance of Private Property

II. BACKGROUND

This policy is based on District Ordinance 83-2, Section 5 (Engineering Policies and Procedures 1-310).

III. POLICY

The District will not perform flood control maintenance work on any facility where it does not have right of way for such facility. Maintenance work of a permanent nature on private land would constitute spending public funds to improve private property. An exception to this practice is to provide needed maintenance work in an emergency situation.*

---

*Cross Reference: See Engineering Policies & Procedures 1-356, "Right of Way Dedication—Field Personnel Response."

APPENDIX M

SEDIMENT TESTING REPORT

ADOBE CREEK WATERSHED PLANNING STUDY
CREEKBED SEDIMENT TESTING AND ANALYSIS
SANTA CLARA COUNTY, CALIFORNIA
PROJECT 5499/1
DISTRICT PROJECT NO. 1010

INTRODUCTION

This report summarizes work performed and findings of an investigation conducted along Adobe Creek in Santa Clara County, California. As part of the watershed planning study being conducted by the Santa Clara Valley Water District (District), Terratech was retained to perform sediment sampling at selected locations along the Adobe Creek alignment. Additionally, sampling was performed to characterize the influence from Barron Creek, which enters Adobe Creek near the Bayshore Freeway (Highway 101). For analysis of the presence of urban pollutants for the District's nonpoint source program, samples were submitted for testing of revegetation potential, and for preliminary geotechnical classification.

Sample locations were identified on the Adobe Creek Plan & Profile sheets, located with latitude and longitude positioning coordinates, and provided in a computerized database, together with analytical results in a "pull-down" format in ATLAS GIS, by Cardinal Technologies.

OBJECTIVE

The objective of this study was to characterize Adobe Creek sediments at targeted locations with respect to naturally occurring constituents and point and nonpoint source contaminants. Specific sampling locations were selected by the District to identify influences from various urban activities and features such as below Foothill College, and above and below the Barron Creek confluence. Additionally, sampling for agricultural suitability related to proposed bank revegetation was performed. Sixteen samples were retrieved from eleven sites, ten for contaminant analyses and six for revegetation testing.

WORK PERFORMED

The following work was performed for this project.

1. Conducted background research, including review of geologic conditions likely to affect sediment composition, review of available recent sediment studies on other streams entering San Francisco Bay, and other readily available resources related to the project.

2. Coordinated and scheduled field work with District survey personnel, analytical laboratories, and Terratech's in-house laboratory. The District provided equipment and personnel to establish global positioning data at each sampling point. This information is summarized in our computerized database.

3. Performed sediment sampling in July 1994 at the locations shown in Figure 1. Specific sampling points were selected by the District engineer with field input by a certified engineering geologist from Terratech's staff. Toxics and revegetation soil samples were retrieved on July 14, 1994, and bulk samples for sieve analyses were retrieved on July 21, 1994.

Sample numbers, locations, approximate stations and purposes are as follows:

SAMPLE/STATION		DESIGNATION	PURPOSE
1.	132+00	SED-1	Characterize end result from combined Barron and Adobe Creek watersheds
2.	135+00	SED-2	Adobe Creek upstream of Barron Creek influence
3.	9+00	SED-3	On Barron Creek, without Adobe influence, in sediments
	9+00	NAT-3	On Barron Creek in native soils
4.	254+00	SED-4	Upstream of El Camino Real runoff, upstream of concrete-lined channel
	254+50	REVEG-1R	Revegetation potential
	252+00	REVEG-1L	Revegetation potential
5.	368+50	SED-5	Upstream of Yerba Buena Avenue to show influence of Foothill Expressway runoff
6.	398+00	REVEG-2R	Revegetation potential
7.	400+00	SED-7	Characterize sediments upstream of proposed channel improvements (W.Edith Avenue)
	400+00	REVEG-3R	Revegetation potential
8.	458+50	SED-8	Characterize Interstate 280 runoff influence (upstream of Manresa Way)
9.	505+00	SED-9	Characterize upstream of Interstate 280
10.	529+00	REVEG-4R	Revegetation potential
		REVEG-4L	Revegetation potential
11.	610+00	SED-11	Characterize sediments upstream of urban development (upstream of Murietta Lane)

Samples were collected in glass jars (metals analyses), brass liners (other toxics analyses), Ziploc bags (revegetation testing), and 5-gallon buckets (sieve analyses). Toxics samples were sealed, labelled and stored on ice until delivered to the laboratory. Chain-of-custody documentation was maintained during toxics sample handling and transportation.

Samples for contaminant testing comprised four discreet samples collected in a 1-meter grid pattern at each sampling station. The grid pattern was used to minimize the effects of local variations in sediment composition. These four samples were then composited in the field and packaged. Samples were collected with a trowel from a depth of 6 to 12 inches, with the exception of one sample (NAT-3) from the Barron Creek channel upstream of Highway 101 and the Adobe Creek confluence. That sample was collected in native soils at a depth of about 2 feet.

All sampling equipment was precleaned with a non-phosphate soap solution followed by a rinse with potable water, then distilled water.

4. Submitted samples to the laboratory. Ten soil samples (SED-1, SED-2, SED-3, NAT-3, SED-4, SED-5, SED-7, SED-8, SED-9, and SED-11) were submitted to Clayton, the District contract laboratory for analysis for:

   * Title 26 Metals (EPA Methods 6010, 7471 and 9073)
   * Total Petroleum Hydrocarbons as Diesel (EPA Method 8015) [selected samples rerun by gas chromatograph/mass spectrometry to identify organic substances]
   * Total Recoverable Petroleum Hydrocarbons (EPA Method 418.1)
   * Chlorinated Pesticides and PCB's (EPA Method 8080)
   * Polynuclear Aromatic Hydrocarbons (EPA Method 8100)
   * Chlorinated Herbicides (EPA Method 8150)

   Samples from these ten locations were also submitted to Terratech's in-house laboratory for analysis for:

   * Organic Content (ASTM D-2974)
   * Total Sieve Analysis: Including #200 wash (ASTM C-117,136)
   * Moisture Content (ASTM D-2216)

   The six revegetation samples (REVEG-1R, REVEG-1L, REVEG-2R, REVEG-3R, REVEG-4R, and REVEG-4L) were submitted to Soil and Plant Laboratory in Santa Clara for agriculture suitability analysis (Test AO5). This analysis included texture, major nutrient, chloride content, and cation exchange capacity.

5. Provided the data collected in an IBM personal computer (Microsoft DOS) compatible database. Data collected is indexed by latitude and longitude. In addition, appropriate computer software to access the data will be provided under separate cover.

6. Evaluated the data with respect to the study's objectives and prepared this report summarizing work performed and our findings and comments.

PRIOR INVESTIGATIONS ON ADOBE CREEK

A Phase I Hazardous Materials Assessment was conducted along Adobe Creek from El Camino Real to Hidden Villa by Terratech in 1993. Soil sampling and analysis was conducted as part of this investigation targeting possible sources of contamination along the alignment. That analytical data has been included in the GIS package and is summarized in Table 1 and 4 with the data from the current investigation. Sample designations, approximate stations and purposes are as follows:

	SAMPLE/STATION	DESIGNATION	PURPOSE
1.	310+00	ALTM-31	Analysis of Creek bank soils adjacent to former adjacent waste disposal site on Alta Mesa Cemetery property
2.	508+00	FH-508	Analysis of sediments adjacent to Foothill College Maintenance Yard
3.	613+00	LF-613	Analysis of sediments adjacent to domestic landfill on Hidden Valley Trust property
4.	626+00	LF-626	Analysis of sediments adjacent to domestic landfill on Hidden Valley Trust property
5.	634+00	HV-634	Analysis of Creek bank soil adjacent to drum & refuse storage area on Hidden Valley Trust property

Results of the Phase I study did not reveal significant impact to stream sediments from the targeted sites.

PHYSICAL SETTING

The site is located within Santa Clara Valley, a southeastward extension of San Francisco Bay within the California Coast Ranges. The Santa Clara Valley is bounded on the northeast by the Diablo Range and on the southwest by the Santa Cruz Mountains. The valley is underlain by unconsolidated alluvial fill washed into a structural depression from the bedrock of the mountainous areas. Adobe Creek is one of a number of drainages originating in the Santa Cruz Mountains to the southwest and draining northeastward into San Francisco Bay.

Adobe Creek originates at elevations of about 2,400 feet along Monte Bello Ridge in the Santa Cruz Mountains. Smaller tributaries also enter the drainage above the project alignment from a smaller ridge, El Corte Madera, to the northwest.

Adobe Creek empties into the Palo Alto Flood Basin of the Santa Clara Valley Basin, just east of the Bayshore Freeway (Highway 101). The creek bottom lies at an elevation of about 0 and is tidally influenced in this area. From this location, the alignment trends southwesterly toward El Camino Real in Palo Alto, within the flat interior portion of the basin. The stream elevation rises toward Los Altos Hills crossing into the unconfined forebay where deposits from the mountains form alluvial fans bordering the baylands. Rising into the santa Cruz Mountains to the southeast, the stream climbs into the bedrock area as defined by the District (SCVWD, 1989).

West of Foothill Expressway Santa Clara Formation bedrock is exposed above the stream channel. Just above Foothill College, outcrops of Cretaceous Franciscan Formation sandstone/graywacke is faulted against the Santa Clara Formation, along with Franciscan Formation greenstone and Tertiary Monterey Shale. Above Francemont Drive, Franciscan Formation greenstone is the predominant bedrock, with fingers of Franciscan sandstone/graywacke exposed at higher elevations (Diblee, 1966).

The Santa Clara Formation is comprised primarily of gravels derived from the Franciscan Formation within a matrix of sandstone or siltstone. The Monterey Shale is composed of gray clay shale and siltstone. The Franciscan Formation sandstone/graywacke is a hard sedimentary unit composed of quartz, plagioclase, biotite, iron oxides and other dark minerals. The Franciscan greenstone is a massive metamorphic unit composed of plagioclase, chlorite, pyroxene, sphene and iron oxides. Metals likely to be associated with the Franciscan source rock and Santa Clara Formation sedimentary rock derived from the Franciscan include chromium, iron, magnesium, manganese, nickel, and zinc. Minor amounts of lead are sometimes associated with olivene, a constituent of the basaltic rock from which greenstone originates.

FINDINGS AND DISCUSSION

Metals Analyses

Results of metals analytical testing, including those from the Phase I assessment, are presented in Table 1. Analytical reports and chain-of-custody documents for the recent testing are presented in Appendix A. Metals concentrations were converted from wet weight, as reported, to dry weight for comparison with results from other studies and the Puget Sound criteria (see Table 2). In general, concentrations of metals found in the Phase I assessment sampling performed along Adobe Creek fell within the range found during this investigation.

The metal concentrations along Adobe Creek showed a variety of distributions. Selenium and thallium were not detected in any of the samples. Concentrations of cadmium, mercury and molybdenum were above Clayton Laboratory's detection limits only in the sediment from the Barron Creek channel. Lead and zinc concentrations showed clear increases moving downstream, a nonpoint source pattern. However, concentrations of beryllium, cobalt, nickel and vanadium showed the opposite distribution, tending to decrease moving downstream, a natural, parent rock erosion pattern. The concentrations of the remaining six metals (antimony, arsenic, barium, chromium, copper and silver) showed no clear trend relative to location. Overall, the maximum measured metal concentrations were found near Foothill College (FH-508), potentially due to point source factors, and at the mouth of Barron Creek (SED-3 and NAT-3), probably due to nonpoint source factors. The influence of tidal flushing of the lower reaches of Barron and Adobe Creek may also impact metals concentrations in these lower reaches.

The Proposed Storm Water Management Plan (SCVWD, 1994) identified copper, lead and zinc in disc brake pads as potential contributors of these metals to storm waters entering the Bay. The findings suggest that in most brands of brake pads tested, copper was found at the highest percentages and would therefore likely be the significant metal source from the pads. Zinc was a less significant brake pad constituent (in most cases composing less than 1 percent of brake pad material), and only in two brands out of the 25 pads tested was lead found at appreciable levels. The results from the Adobe Creek analyses appear to be inconclusive with respect to the contribution from brake pad wear, as copper levels remained somewhat constant along the alignment and lead and zinc levels were variable except below the influence of Barron Creek. The Proposed Storm Water Management Plan identified the principle source of nickel in urban runoff to be erosion of upland soils; in Adobe Creek, the nickel levels decrease downstream, as would be expected under this natural scenario.

The Puget Sound Marine Sediment Quality Standards (Washington State Department of Ecology, 1991) provide chemical criteria, in dry weight, for eight metals; arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc. The Puget Sound criteria, according to the Washington State Department of Ecology, correspond to a sediment quality that results in no adverse effects to Puget Sound marine systems. Concentrations (converted to dry weight) of these metals found in Adobe Creek sediments are plotted against the Puget Sound standards in Figures 2 through 5. As shown, the Barron Creek surface samples contained mercury and zinc at levels exceeding the Puget Sound standards. No Adobe Creek samples contained metals at concentrations approaching the Puget Sound guidelines.

Table 3 provides a summary of the Puget Sound metals criteria, a range of metal concentrations found at other Bay Area locations, typical natural values and other regulatory values.

Woodward-Clyde Consultants (1992) compared six metals in Calabazas Creek sediments with other stream and Bay locations and with the Puget Sound Criteria. For the most part, their study found targeted metals - cadmium, copper, mercury, nickel, lead and zinc (Cd, Cu, Hg, Ni, Pb and Zn, respectively) - to be present in concentrations lower than the Puget Sound Criteria. Results of the Adobe Creek analyses all fell within or below the general ranges of metals concentrations found in the Woodward-Clyde study.

Results of a study of background concentrations of selected analytes from rural, suburban and urban East Bay sources: Briones Regional Park, Tilden Regional Park and Oak Glen Park and Lake Merritt (Bryden, et.al, 1991) are shown in Table 3. Adobe Creek chromium, cobalt, copper, nickel and vanadium concentrations appear to be higher by factors of 2 to 3 above those found at the rural and suburban East Bay locations, except for sediment samples from in or downstream of Barron Creek. These differentials likely reflect geologic variations in parent rock of the upstream sediments. Below Barron Creek, again it appears there has been some enrichment in metals concentrations due to urban contributions, particularly from the Barron Creek drainage. Copper, lead and zinc concentrations from in and below Barron Creek fall within the reported range for "East Bay Urban" sites.

Concentrations of all metals tested fall within typical ranges of native soil concentrations above the Barron Creek confluence (Dragun, 1988).

Results of the metals analyses also revealed metals concentrations significantly lower than the Total Threshold Limit Concentrations (TTLC) in all cases. Total copper, lead and nickel concentrations exceeded respective Soluble Threshold Limit Concentrations (STLC) in almost all locations sampled. The State of California Department of Toxic Substances Control, Preliminary Endangerment Assessment (June 22, 1990) provides exposure limits for "chronic" soil ingestion and 5-year old child criteria. The Adobe Creek concentrations of arsenic, barium, nickel and vanadium exceeded the 5-year-old child exposure limits. The Barron Creek surface sample (SED-3) exceeded the 5-year-old child limit for mercury. All metals concentrations were well above the "chronic" exposure limits.

Pesticides

Organochlorine pesticides, specifically 4'4'-DDD, 4'4'-DDE, 4'4'-DDT and/or chlordane, were detected in downstream areas. As presented in Table 4, concentrations of less than 0.7 parts per million (ppm) combined, were found in SED-1, SED-2, SED-3, and SED-4. The highest concentration; 0.27 ppm; of combined 4'4'-DDD, 4'4'-DDE, and 4'4'-DDT was found in SED-1, well below the TTLC of 1.0 ppm for these compounds. Chlordane was found at 0.59 ppm in SED-3, well below the TTLC of 2.5 ppm. No polychlorinated biphenyl's (PCB's) or chlorinated herbicides were detected in samples tested.

Petroleum Hydrocarbons

Total petroleum hydrocarbons (TPH) as diesel and total recoverable petroleum hydrocarbons (TRPH) were reported in nearly all samples analyzed (see Table 4). Concentrations of TRPH in and downstream of Barron Creek ranged from 580 to 1,600 ppm. TPH as diesel values in this area ranged from 69 to 610 ppm. The laboratory notes on the analytical reports indicated that TPH as diesel results did not match the typical diesel pattern, and in most locations where diesel was reported, the pattern appeared to more closely resemble oil (all extractable hydrocarbons from C10 to C42 are reported). Concentrations were at or below 100 ppm upstream of the Barron Creek confluence. A petroleum concentration of 1,000 ppm is typically used in the area as a minimum remedial threshold.

The analytical methods used to determine TPH as diesel (EPA 8015 - Modified) and TRPH (EPA Method 418.1) are non-selective and do not discriminate between petroleum and non-petroleum derived hydrocarbons. In an attempt to determine the compounds detected by the TPH analysis, Clayton Environmental Consultants re-analyzed the TPH extract from SED-1, SED-2 and SED-3 by gas chromatograph/mass spectrometry (GC/MS). Chemist Michael Lynch with Clayton reported that the compounds detected were from organics in the samples and that no petroleum fuel related compounds were present in the samples (verbal comm. December 5, 1994). The GC/MS analytical results are presented at the back of Appendix A.

Polynuclear aromatics (PNAs) were only detected in samples SED-2 and SED-3 around the Barron Creek confluence. Both concentrations were at or just above detection limits and well below the PNA's listed in the Puget Sound criteria. PNAs typically originate from burnt organic matter.

Gradation, Moisture and Organic Content Analyses

Samples SED-1, SED-2 and SED-3 consisted of saturated organics (peat) with silt. The native material beneath SED-3 in Barron Creek (sample NAT-3) consisted of wet gray clayey sand with gravel. The remainder of the samples retrieved along Adobe Creek consisted of poorly to well graded sand with gravel and gravel with sand with little to no organics or fines. The gravel samples typically contained rounded cobbles ranging from 3 to 6 inches in diameter. Grain size distribution curves for the coarse-grained samples are provided in Appendix B.

Revegetation Analyses

Results of the revegetation analyses from Soil and Plant Laboratory, Inc. are presented in Appendix C. Results for the six soil samples showed no particular limitations with respect to soil chemistry or anticipated soil structure. Phosphorus and/or potassium fertilization was suggested for all samples.

CONCLUSIONS

In summary, sediment toxic and metals concentrations in stream sediments from Adobe Creek, above the Barron Creek confluence, are similar to or lower than concentrations found in the upstream reaches of the drainage and other South Bay locations, and are variable in comparison to East Bay locations, likely due to variations in source rock. The contribution of contaminants from the more urban Barron Creek watershed appears to be more significant than from the more pristine Adobe drainage. No Adobe sediment samples contained metals in excess of the Puget Sound Marine Sediment Quality Standards Chemical Criteria. Below Barron Creek, mercury and zinc concentrations approached half of the Puget Sound Criteria. The criteria was exceeded for these two metals in the sole Barron Creek sediment sample. Further, no concentrations of metals tested in the Adobe Creek drainage exceeded California hazardous waste thresholds.

The reported petroleum hydrocarbon content of downstream sediments approached, and in one case exceeded, the typical threshold of minimal remediation for the area - 1,000 ppm. However, under more detailed analyses these results appear to be due to the influence of organic materials in the samples and not petroleum contamination.

LIMITATIONS

This report and the associated work have been provided in accordance with the general principles and practices currently employed in the environmental consulting profession. This is in lieu of all warranties, express or implied. Our sampling and testing program was necessarily limited.

Report prepared by:

TERRATECH, INC.

Mary Bannister

Mary B. Bannister
CEG 1565

Reviewed by:

Eric R. Lautenbach
CE 42437

ERIC R. LAUTENBACH
No. C042437
EXP. 3/31/96
CIVIL

BIBLIOGRAPHY

1. Bryden, G. W., Cheung, P., Deleon, A., Kirkpatrick, T., Perrine, L., Seludo, R., Sheidgant, R., Williams, M., and Smith, L. R., 1991, Background levels of selected environmental analytes in soil and sediment from urban and suburban parks east of San Francisco Bay, in Bursztynsky, Terry, P.E., ed., Proceedings of Hazmacon^{R} 91, Hazardous Materials Management Conference and Exhibition, p. 191-195.

2. Diblee, T. W., Jr., 1966, Geology of the Palo Alto Quadrangle, Santa Clara and San Mateo Counties, California, Map Sheet 8, California Division of Mines & Geology.

2. Dragun, James, 1988, The Soil Chemistry of Hazardous Materials: Silver Spring, Maryland, Hazardous Materials Control Research Institute, p. 75-152.

3. Iwamura, Tom, 1990, Geology and groundwater quality, in Seminar Proceedings, Ground Water contamination in the Santa Clara Valley, Presented at the annual meeting, San Francisco Section American Society of Civil Engineers, September, 1990, Appendix A, p.A-1 to A-19.

4. Santa Clara Valley Water District, revised 1989, Standards for the construction and destruction of wells and other deep excavations in Santa Clara County, Appendix A, Geology and groundwater quality.

5. Santa Clara Valley Nonpoint Source Pollution Control Program, 1994, Proposed Storm Water Management Plan for NPDES Permit Period 1995-2000, October 1, 1994 SWMP Version.

6. Terrasearch, Inc., 1992, Preliminary Environmental Assessment of Sediments on Calabazas Creek Flood Control Project, Bayshore Freeway to Holding Basin, Santa Clara, California, for Santa Clara Valley Water District, 12 p.

7. Terratech, Inc., 1993, Phase I Hazardous Materials Assessment, Upper Adobe Creek, El Camino Real to Moody Road, Santa Clara County, California, 21 p.

8. Washington State Department of Ecology, 1991, Puget Sound Sediment Management Standards, in Sediment Management Standards, Chapter 173-204 WAC, Appendix A, 61 p.

9. Woodward-Clyde Consultants, letter dated March 30, 1992 to Mr. Randall Talley, Santa Clara Valley Water District providing a comparison of Calabazas Creek sediment data to other stream sediments in Santa Clara Valley and to Puget Sound Sediment management standards, 3 p.

TABLE 1 - METALS

Summary of Analytical Test Results

Wet Weight

Adobe Creek Watershed Planning Study
Creek Bed Sediment Testing and Analysis
Santa Clara County, California

(all concentrations in mg/kg)

Sample	SED-1	SED-2	SED-3	NAT-3	SED-4	ALTM-310	SED-5	SED-7	SED-8	SED-9	FH-508	SED-11	LF-613	LF-626	HV-634	Clayton DL
Date	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	10/29/93	10/29/93	10/29/93	
Station	132+00	135+00	9+00(1)	9+00(1)	254+00	310+00*	368+50	400+00	458+50	505+00	508+00*	610+00	613+00*	626+00*	634+00*	(2)
Antimony	1	2	2	2	2	4.2	2	2	3	2	4.5	2	ND	ND	ND	1
Arsenic	2	2	2	2	1	ND	ND	2	ND	1	3.2	2	ND	2.6	ND	1
Barium	73	76	72	170	81		91	86	82	100		97				1
Beryllium	0.2	0.2	0.2	0.3	0.3	0.39	0.3	0.3	0.3	0.3	0.5	0.4	0.31	0.39	0.31	0.1
Cadmium	ND	ND	0.8	ND	ND	0.29	ND	ND	ND	ND	ND	ND	ND	ND	0.33	0.5
Chromium	56	72	36	89	100	110	110	120	99	120	160	140	110	120	78	1
Cobalt	11	14	8	18	18		20	18	19	23		23				1
Copper	37	35	48	41	38	51	38	41	41	49	62	49	39	46	45	1
Lead	41	32	75	5	7	15	5	7	6	8	7.7	14	3.8	8.4	12	1
Mercury*	0.1	ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1
Molybdenum	ND	ND	1	ND	ND		ND	ND	ND	ND		ND				1
Nickel	48	57	31	80	80	80	92	90	96	100	140	110	91	100	72	1
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Silver	ND	ND	ND	0.6	0.9	ND	0.7	ND	1.1	1	ND	0.8	ND	ND	ND	0.5
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Vanadium	46	59	32	72	82		83	80	75	86		100				1
Zinc	120	91	200	62	67	63	66	70	69	69	69	68	47	60	66	1

NOTES:

1. On Barron Creek
2. Clayton Environmental Consultants' laboratory detection limit
ND - Not detected above laboratory's threshold of reliable quantification
* - Analyses performed by Curtis & Tompkins, Ltd.
Blank cells represent no analysis

TABLE 2 - METALS
Summary of Analytical Test Results
Dry Weight (2)

Adobe Creek Watershed Planning Study
Creek Bed Sediment Testing and Analysis
Santa Clara County, California

(all concentrations in mg/kg)

Sample	*SED-1*	*SED-2*	*SED-3*	*NAT-3*	*SED-4*	*ALTM-310*	*SED-5*	*SED-7*	*SED-8*	*SED-9*	*FH-508*	*SED-11*	*LF-613*	*LF-626*	*HV-634*
Date	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	10/29/93	10/29/93	10/29/93
Station	132+00	135+00	9+00(1)	9+00(1)	254+00	310+00*	368+50	400+00	458+50	505+00	508+00*	610+00	613+00*	626+00*	634+00*
Antimony	2.1	4.1	5.2	2.5	2.0	4.4	2.0	2.0	3.3	2.1	4.8	2.0	ND	ND	ND
Arsenic	4.2	4.1	5.2	2.5	1.0	ND	ND	2.0	ND	1.1	3.4	2.0	ND	2.6	ND
Barium	154.8	155.2	186.8	210.6	82.7		92.5	87.1	90.6	106.0		98.0			
Beryllium	0.4	0.4	0.5	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.5	0.4	0.3	0.4	0.3
Cadmium	ND	ND	2.1	ND	ND	0.3	ND	ND	ND	ND	ND	ND	ND	ND	0.3
Chromium	118.8	147.0	93.4	110.3	102.1	115.5	111.9	121.6	109.4	127.2	169.6	141.4	111.7	121.8	81.9
Cobalt	23.3	28.6	20.8	22.3	18.4		20.3	18.2	21.0	24.4		23.2			
Copper	78.5	71.5	124.5	50.8	38.8	53.6	38.6	41.5	45.3	51.9	65.7	49.5	39.6	46.7	47.3
Lead	87.0	65.3	194.6	6.2	7.1	15.8	5.1	7.1	6.6	8.5	8.2	14.1	3.9	8.5	12.6
Mercury	0.2	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	ND	ND	2.6	ND	ND		ND	ND	ND	ND		ND			
Nickel	101.8	116.4	80.4	99.1	81.7	84.0	93.6	91.2	106.1	106.0	148.4	111.1	92.4	101.5	75.6
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	0.7	0.9	ND	0.7	ND	1.2	1.1	ND	0.8	ND	ND	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	97.6	120.5	83.0	89.2	83.7		84.4	81.0	82.9	91.2		101.0			
Zinc	254.5	185.8	518.8	76.8	68.4	66.2	67.1	70.9	76.2	73.1	73.1	68.7	47.7	60.9	69.3

NOTES:

1. On Barron Creek
2. Converted to dry concentration using the formula: wet concentration * (1+ moisture content) with moisture content in decimal form.

ND - Not detected above laboratory's threshold of reliable quantification
* - Analyses performed by Curtis & Tompkins, Ltd.
Blank cells represent no analysis

TABLE 3 - METALS
Summary of Typical Metals Concentrations and Standards

Adobe Creek Watershed Planning Study
Creek Bed Sediment Testing and Analysis
Santa Clara County, California

(all concentrations in mg/kg)

METAL	PUGET SOUND CRITERIA (1)	ADOBE CREEK RANGE (DRY WEIGHT)	CALABAZAS CREEK (2)	GUADALUPE & SOUTH BAY STATIONS (2)	ALAMEDA STATIONS (2)	EAST BAY RURAL (3)	EAST BAY SUBURBAN (3)	EAST BAY URBAN (3)	NATURALLY OCCURRING (4)	TTLC/STLC (5)	DTSC PEA (6)
ANTIMONY		ND - 5.2				0.3 - 1	0.4 - 0.8	0.8 - 1.4	0.6 - 10	500/15	500/0.9
ARSENIC	57	ND - 5.2	24 - 44	0.1 - 1.9	0.99 - 13	1.7 - 3.9	1.4 - 6.0	1.1 - 6.3	1.0 - 40	500/5	1,000/2
BARIUM		83 - 211				51 -141	52 - 176	42 - 153	100 - 3500		70,000/100
BERYLLIUM		0.3 - 0.5				0.2	0.3 - 0.6	0.1	0.1 - 40	75/0.75	7,000/10
CADMIUM	5.1	ND - 2.1	1	0.12 - 1.9	0.076 - 0.87	0.06 - 0.15	0.09 - 0.15	0.16 - 3.32	0.01 - 7.0	100/1	1,000/2
CHROMIUM	260	36 - 160	ND	120 - 230	29 - 104	12 - 25	17 - 47	21 - 53	5.0 - 3000	2500/560	1E6/2,000
COBALT		8 - 23	18 - 50			6.1 - 6.8	14 - 16	5.6 - 8.8	1.0 - 40		
COPPER	390	38.6 - 124.5	25 - 397	39 - 81	30 - 90	5 2 - 12	23 - 29	24 - 215	2.0 - 100	2500/25	
LEAD	450	3.4 - 194.6	24 - 53	18 - 200	6 - 3120	10.8 - 14.5	14.5 - 20.4	192 - 806	2.0 - 200	1000/5	2,000/58
MERCURY	0.41	ND - 0.5	0.02 - 0.12	0.09 - 0.55	ND - 0.98	0.05 - 0.12	0.07 - 0.26	0.37 - 1.58	0.01 - 0.08	20/0.2	400/.7
MOLYBDENUM		ND - 2.6				0.2 - 0.6	0.3 - 0.5	0.2 - 4.6	0.2 - 5.0		
NICKEL		75.6 - 198.4	73 - 2247	65 - 150	28 - 169	13 - 30	24 - 66	27 - 58	5.0 - 1000	2000/20	20,000/40
SELENIUM		ND	ND	0.12 - 0.41	ND - 0.6	0.3 - 1.1	0.4 - 0.8	0.3 - 1	0.1 - 2.0	100/1	4,000/7
SILVER	6.1	ND - 1.2	ND	1.4 - 2.9	0.024 - 0.22	0.1 - 0.3	0.1 - 0.3	0.8 - 1.6	0.1 - 5	100/5	4,000/7
THALLIUM		ND				0.5 - 1.5	0.8 - 1.5	0.5 - 1.5	0.1 - 12	700/7	100/0.2(7)
VANADIUM		81 - 120.5				10 - 14	23 - 39	15 - 36	20 -500		9,000/10
ZINC	410	47.7 - 254.5	69 - 185	100 - 400	52 - 345	36 - 49	52 -72	155 - 1050	10 - 300	5000/250	00,000/400

NOTES:

1. Washington State Dept. of Ecology, 1991
2. Woodward-Clyde Consultants, 1992
3. Bryden et. al., 1991
4. Dragun, 1988
5. TTLC = Total Threshold Limit Concentration
   STLC = Soluble Threshold Limit Concentration
6. Dept. of Toxic Substances Control, Preliminary Endangerment Assessment - 6/22/90
   "chronic" soil ingestion / 5-yr child

TABLE 4 - PCB'S, PESTICIDES, HERBICIDES & PETROLEUM HYDROCARBONS
Summary of Analytical Test Results

Adobe Creek Watershed Planning Study
Creek Bed Sediment Testing and Analysis
Santa Clara County, California

(all concentrations in mg/kg)

PCB'S, PESTICIDES & HERBICIDES

Sample	SED-1	SED-2	SED-3	NAT-3	SED-4	ALTM-310	SED-5	SED-7	SED-8	SED-9	FH-508	SED-11	LF-613	LF-626	HV-634	D.L.
Date	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	7/14/94	7/14/94	7/14/94	10/29/93	7/14/94	10/29/93	10/29/93	10/29/93	
Station	132+00	135+00	9+00(1)	9+00(1)	254+00	310+00*	368+50	400+00	458+50	505+00	508+00*	610+00	613+00*	626+00*	634+00*	(2)
Chlordane	ND	0.18	0.59	ND	ND	-	ND	ND	ND	ND	-	ND	-	-	-	0.02
DDD,DDE,DDT	0.27	0.027	0.06	ND	0.008	-	ND	ND	ND	ND	-	ND	-	-	-	0.003
Other 8080 Pesticides	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**
PCB's	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	-	ND	-	-	-	**
Chlorinated Herbicides	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	-	ND	-	-	-	**

PETROLEUM HYDROCARBONS

	SED-1	SED-2	SED-3	NAT-3	SED-4	ALTM-310	SED-5	SED-7	SED-8	SED-9	FH-508	SED-11	LF-613	LF-626	HV-634	D.L. (2)
Combined PNA's	ND	6	17	ND	ND	-	ND	ND	ND	ND	-	ND	-	-	-	1
TPHD	610	69	300	29	57	17	37	34	24	22	25	15	15	6	37	1
TRPH	1000	580	1600	50	40	-	80	40	ND	100	-	50	-	-	-	30

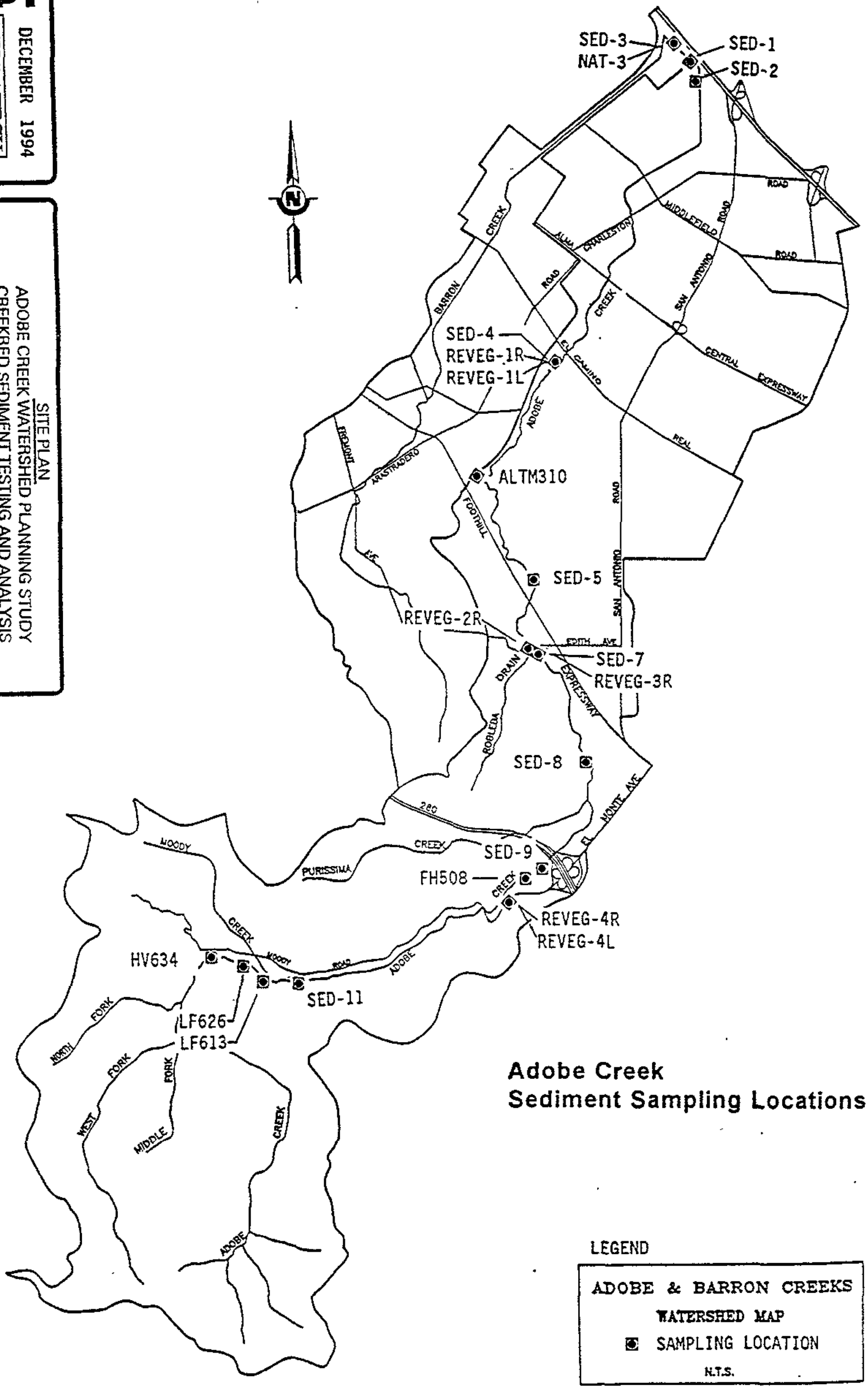
NOTES:

1. On Barron Creek
2. Clayton Environmental Consultants' laboratory detection limit

ND : Not detected above laboratory's threshold of reliable quantification
TPHD : Total petroleum hydrocarbons reported as diesel
TRPH : Total recoverable petroleum hydrocarbons
* : Analyses performed by Curtis & Tompkins, Ltd.
** : See laboratory reports
- : Not analyzed

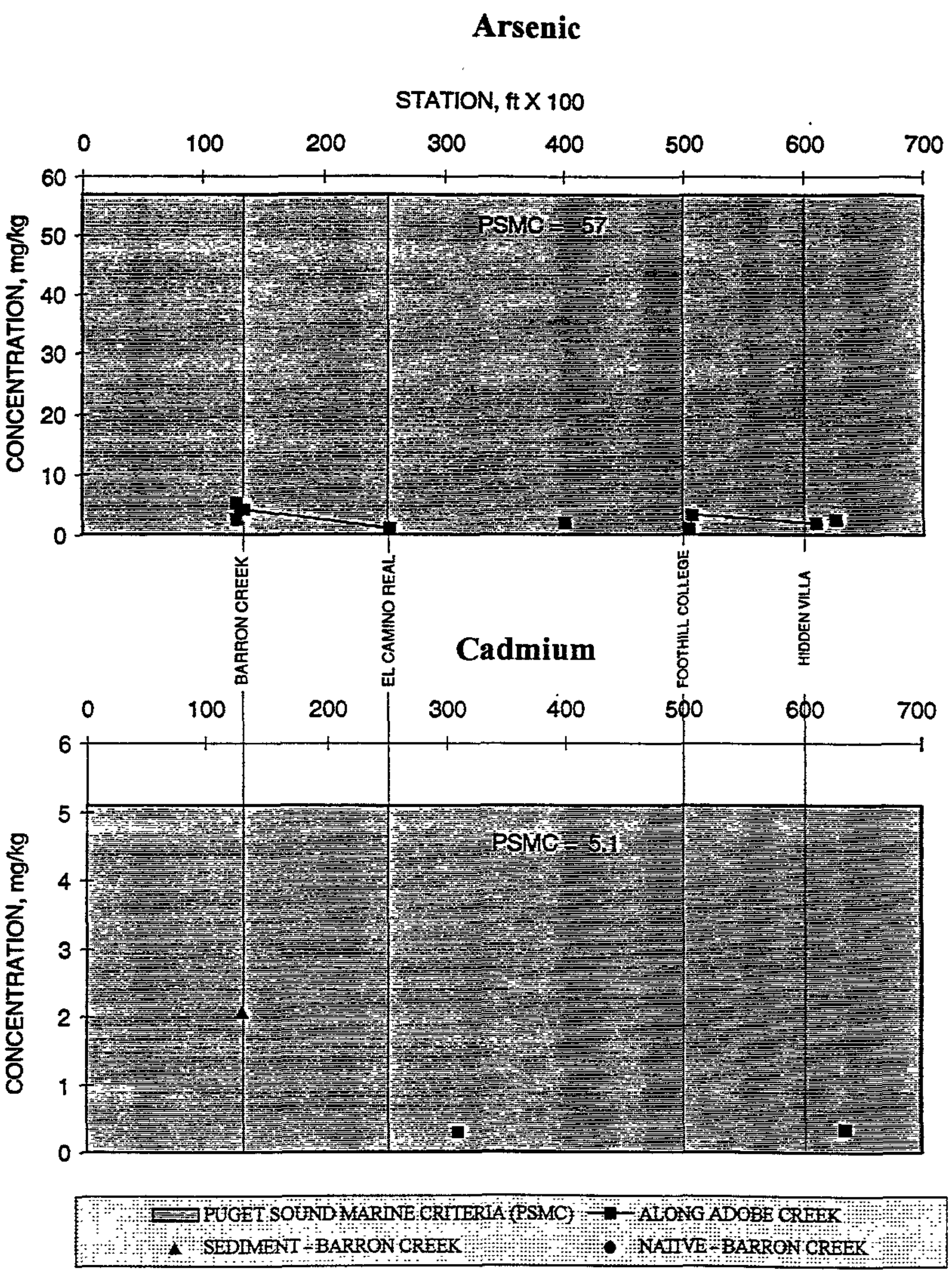
DECEMBER 1994
TERRATECH

SITE PLAN
ADOBE CREEK WATERSHED PLANNING STUDY
CREEKBED SEDIMENT TESTING AND ANALYSIS
SANTA CLARA COUNTY, CALIFORNIA



Adobe Creek
Sediment Sampling Locations

Figure 1

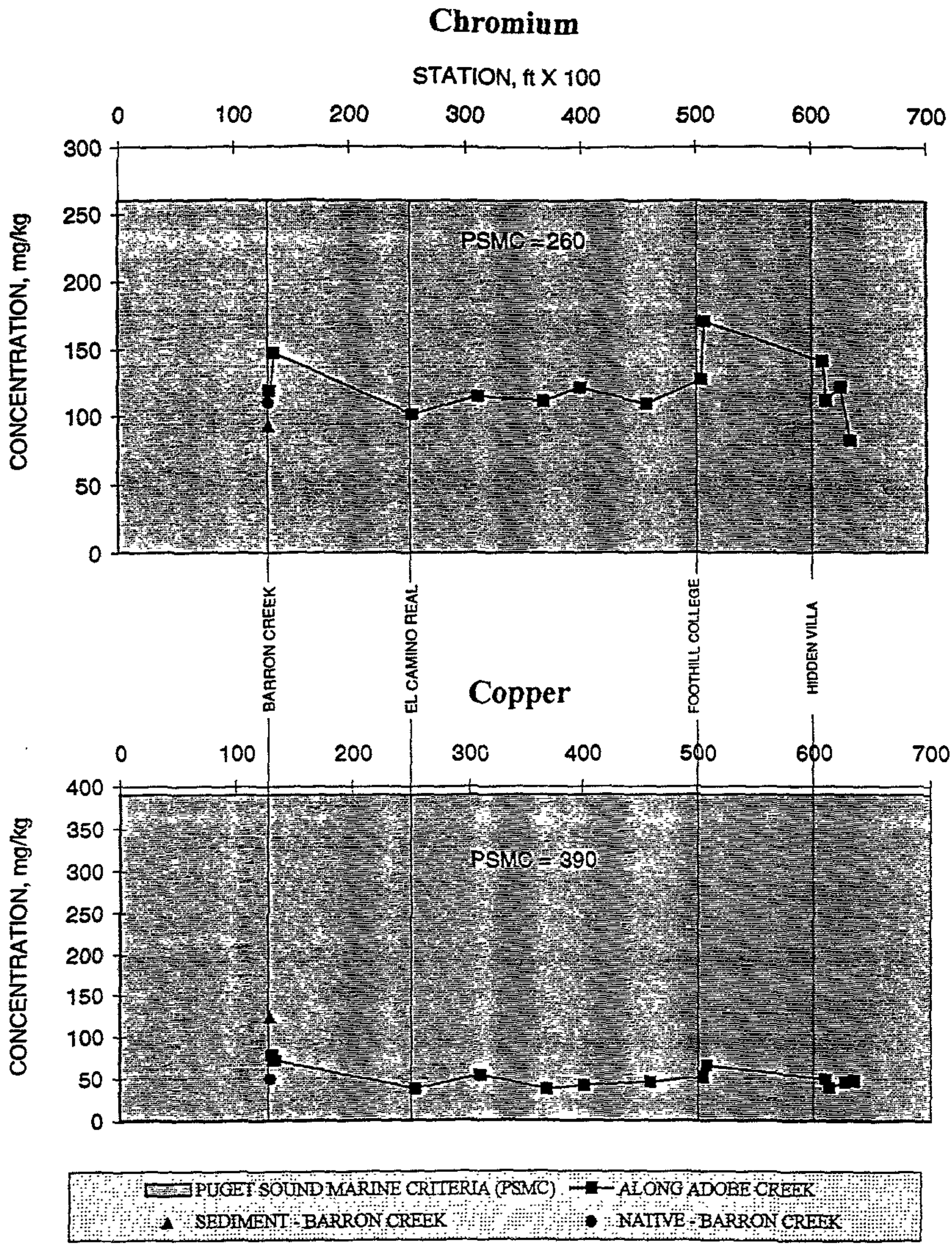


TERRATECH, INC.

ARSENIC AND CADMIUM CONCENTRATIONS

ADOBE CREEK WATERSHED PLANNING STUDY
CREEKBED SEDIMENT TESTING AND ANALYSIS
SANTA CLARA COUNTY, CALIFORNIA

FIGURE
2
PROJECT
5499/1

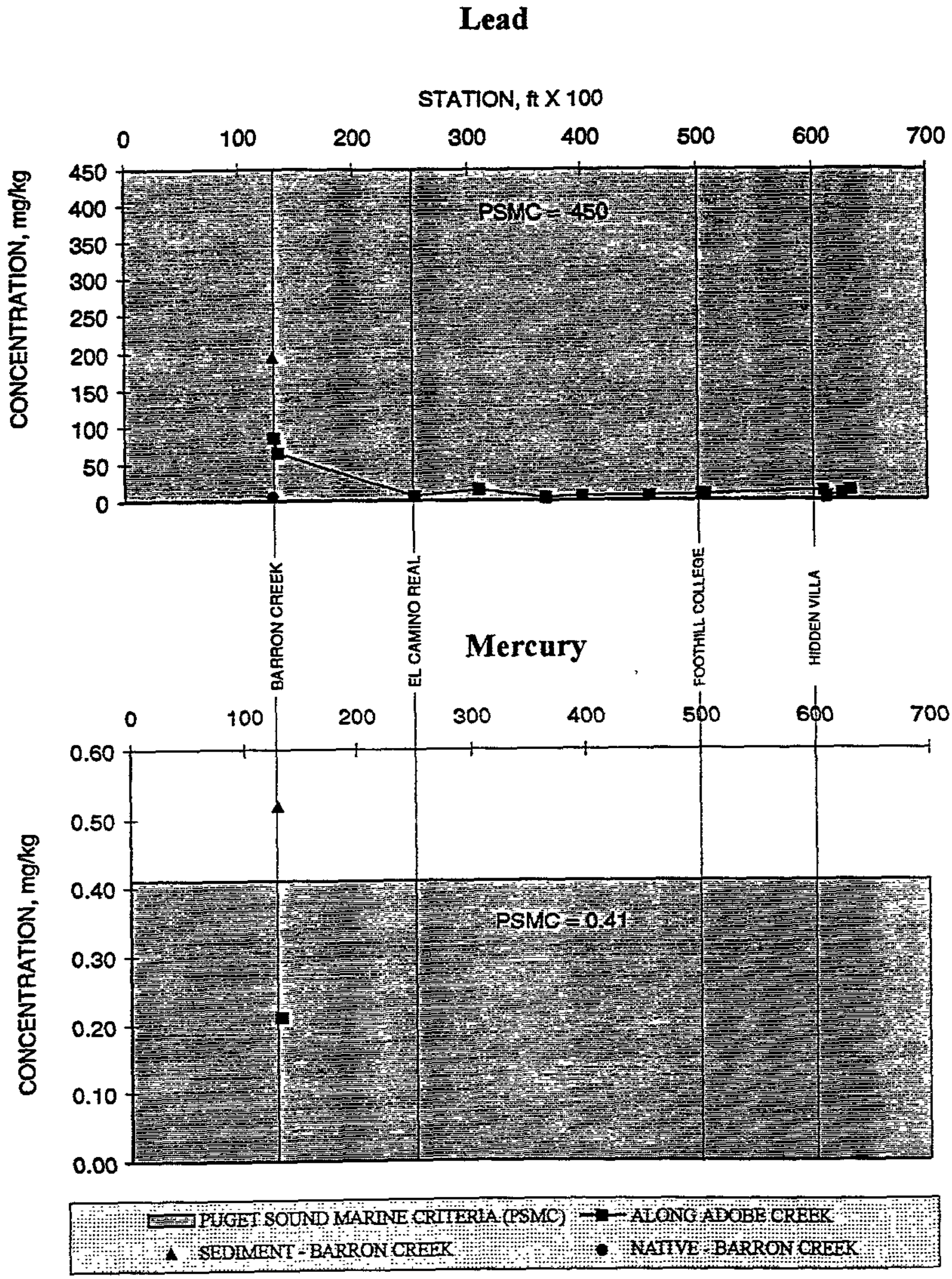


TERRATECH, INC.

CHROMIUM AND COPPER CONCENTRATIONS

ADOBE CREEK WATERSHED PLANNING STUDY
CREEKBED SEDIMENT TESTING AND ANALYSIS
SANTA CLARA COUNTY, CALIFORNIA

FIGURE
3
PROJECT
5499/1

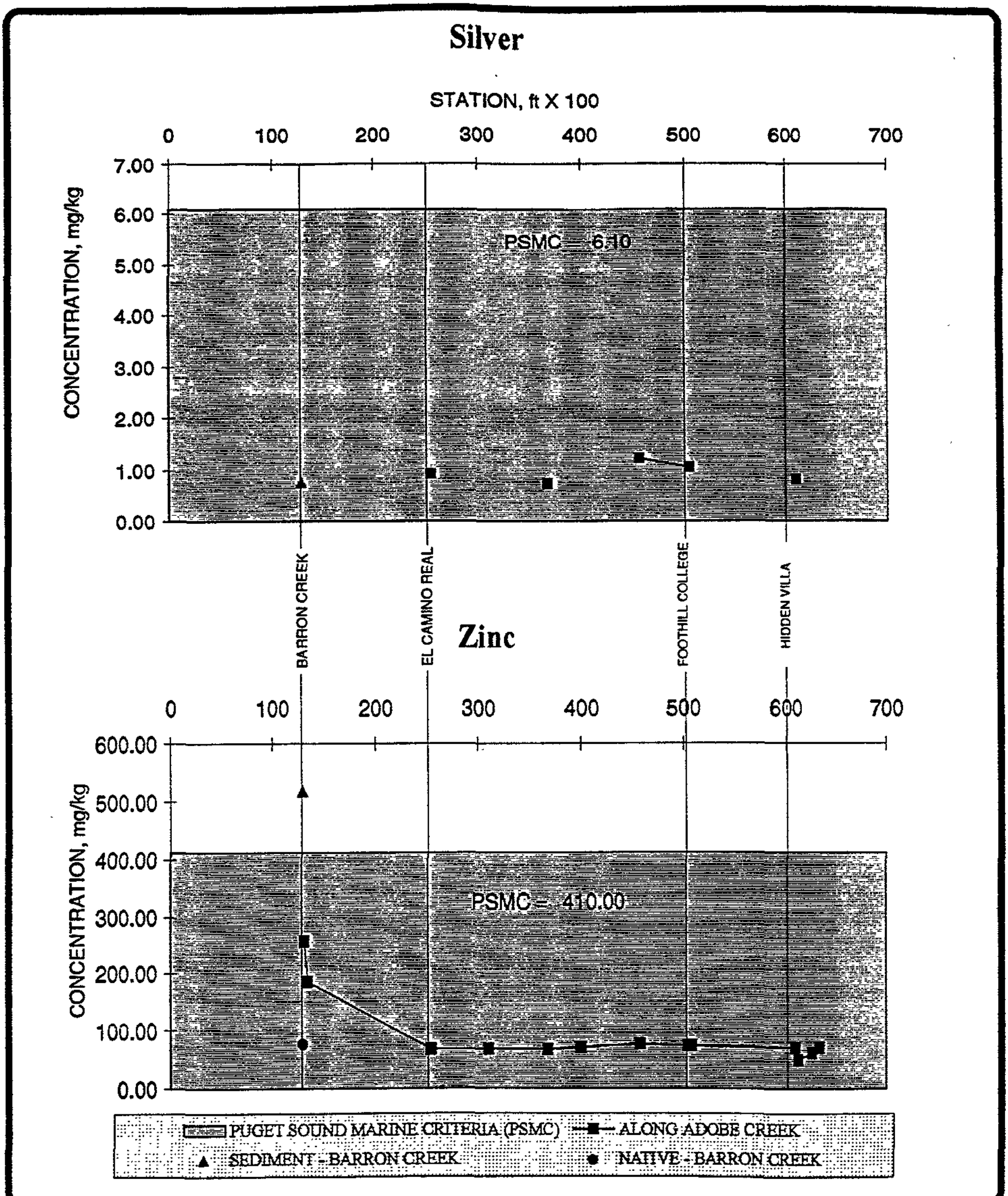


TERRATECH, INC.

LEAD AND MERCURY CONCENTRATIONS

ADOBE CREEK WATERSHED PLANNING STUDY
CREEKBED SEDIMENT TESTING AND ANALYSIS
SANTA CLARA COUNTY, CALIFORNIA

FIGURE
4
PROJECT
5499/1



TERRATECH, INC.

SILVER AND ZINC CONCENTRATIONS

ADOBE CREEK WATERSHED PLANNING STUDY
CREEKBED SEDIMENT TESTING AND ANALYSIS
SANTA CLARA COUNTY, CALIFORNIA

FIGURE
5
PROJECT
5499/1

APPENDIX N

MEMORANDUM OF UNDERSTANDING WITH CALIFORNIA DEPARTMENT OF FISH AND GAME FOR ROUTINE MAINTENANCE ACTIVITIES IN IMPROVED AND UNIMPROVED CHANNELS

AUG 14 1990

SANTA CLARA VALLEY WATER DISTRICT
AND
CALIFORNIA DEPARTMENT OF FISH AND GAME
MEMORANDUM OF UNDERSTANDING
ROUTINE MAINTENANCE ACTIVITIES IN IMPROVED CHANNELS

This Memorandum of Understanding by and between the California Department of Fish and Game, hereinafter called the "Department", and Santa Clara Valley Water District, hereinafter called the "Water District", is for the purpose of delineating and defining routine maintenance activities in improved channels that shall not require further Notice and Agreement in compliance with the Fish and Game Code.

WHEREAS, the Department is required to propose modifications to construction activity pursuant to Fish and Game Code Section 1601 to the Water District, and Section 1601 provides for agreement with the Department on routine maintenance of drainage and flood control facilities; and

WHEREAS, the Department has a duty to conserve fish and wildlife resources of this State; and

WHEREAS, it is essential that the Water District perform routine maintenance activities to maintain District facilities to ensure that the facilities continue to provide the design level of flood protection to which the facilities were constructed, to protect the public's investment, to prevent loss of life and property, and to comply with local ordinances and regulations, federal flood insurance regulations, and other federally mandated programs; and

WHEREAS, it is mutually beneficial to delineate and define routine maintenance, and to establish procedures to expedite maintenance activities, and to provide for the protection of fish and wildlife habitat during such maintenance activities;

WHEREAS, nothing in this agreement shall constitute a waiver of any future or current Department claims to the use and maintenance of natural conditions under the public trust doctrine;

THEREFORE, the Department and the Water District do agree as follows:

I. DEFINITIONS

An improved channel is defined as a waterway in which significant man-made alteration has occurred to improve the passage of flood flows, including straightening and containing within constructed banks and concrete-lined, riprapped, or earth trapezoid channels with engineered banks. The waterways listed in Appendix A attached hereto are the exclusive list of improved channels as defined in this Agreement.

Routine maintenance is defined as those periodically scheduled and implemented activities necessary to maintain the structural and functional integrity of the improved channel.

Channel banks, channel bottoms, and low flow channels are defined by reference to typical cross sections of flood control channels as shown in Diagram 1 attached hereto.

II. CHANNEL MAINTENANCE

The activities identified below for improved channels listed in Appendices A and B, shall constitute routine maintenance activities by definition and shall not require further notice to, and Agreement with, the Department.

The selection and application of herbicides will conform to all applicable State and Federal E.P.A. regulations.

A. Control of weeds and grasses on maintenance roads, on the areas between top of banks and adjacent property and on floodplains or overflow channels to comply with local fire regulations by mowing, discing, hand labor or herbicide application.

B. Control of weeds, grasses, and emergent aquatic vegetation on channel bottoms and banks, and on floodplains or overflow channels to maintain channel design capacity by mowing, hand labor or herbicide application.

C. Control of weeds and grasses on maintenance roads to provide a safe travelway to conduct facility inspection and maintenance activities by mowing, discing, hand labor or herbicide application.

D. Control of weeds and grasses on levees to conduct facility inspection by mowing, hand labor or herbicide application.

E. Control of weeds and grasses in revegetated mitigation areas and landscaped areas to allow plant establishment by mowing, discing, hand labor or herbicide application.

F. Removal of vegetation, silt and debris, and other obstructions to flow in the immediate vicinity (not-to-exceed 100 feet) of the following structures (1) streamflow measuring stations; (2) box culverts and bridges; (3) storm drain outfall structures; and, (4) drop structures (energy dissipaters) to maintain the structures' design functions. Surface flowing water, if any, will be diverted from work area when using equipment in the channel.

G. Removal of woody and herbaceous vegetation with hand labor and tools on channel bottoms and channel banks to maintain channel design capacity. Channels that are to be cleared in strips in alternating years to retain habitat for wildlife, as illustrated in Diagram 2, are indicated in Appendix A under applicable M.O.U. item "GS".

H. Removal of trees or branches that are in imminent danger of falling, fallen trees, and associated debris to maintain the channel design capacity .

J. Removal of accumulated sediment, debris, rubbish, and other obstructions from channels with concrete bottoms to maintain channel design capacity.

K. Removal of accumulated sediment, debris, rubbish and other obstructions in channels with unlined channel bottoms to maintain channel design capacity. Channels that are to be cleared in strips in alternating years to retain habitat for wildlife, as illustrated in Diagram 2, are indicated in Appendix A under applicable M.O.U. item "KS".

L. Removal of accumulated sediment, debris, rubbish and other obstructions in channels with unlined channel bottoms to maintain low flow channel design capacity or when necessary, to provide fish passage or habitat identified in District environmental documents.

M. Removal of accumulated sediment, debris, rubbish, and other obstructions from sediment basins to maintain design functions as identified in Appendix B.

N. Repair of failed sections of rock, gabion, concrete-lined or sacked concrete riprap bank protection to maintain bank stabilization measures previously installed for public health safety and benefit. Surface flowing water, if any, will be diverted from work area when using equipment in the channel.

III. TIME AND MANNER OF WORK

Maintenance work shall be performed at a time and in a manner which shall meet the District's obligations to public health and safety while recognizing the need to minimize adverse impacts to fish and wildlife resources and their habitat. Periods of concern to the Department are March through June for nesting birds, and October through March for anadromous fish.

IV. REPORTING REQUIREMENTS

The Water District shall provide written notification to the Lieutenant Warden for Santa Clara County of the monthly schedule for that work tentatively proposed.

The Water District shall provide to the Regional Manager, Region 3, of the Department, written notification of maintenance projects completed within the preceding quarter (quarterly reports). A maintenance project is defined as an improved channel wherein one or more of the maintenance activities identified in this Memorandum of Understanding have been performed during any given reporting period. Due dates for submitting quarterly reports shall be as follows:

May 15 for first quarter projects	(January through March)
August 15 for second quarter projects	(April through June)
November 15 for third quarter projects	(July through September)
February 15 for fourth quarter projects	(October through December)

A fee payable to the Department shall accompany each quarterly report. The fee amount shall be in accordance with the current fee schedule, as published by the Department for work performed under an MOU, based on the number of maintenance projects completed within a calendar year.

V. AMENDMENT AND TERMINATION

This Memorandum of Understanding may be amended at any time upon written agreement of the parties. Pursuant to Section 1601, agreement of the Department was obtained by the Water District for the improved channels listed in Appendix A. If the Water District gives notice to and obtains the agreement of the Department to construct additional improved channels, in compliance with Section 1601, any such additional improved channels will be added to Appendix A by written amendment of this Agreement, and all provisions of this Agreement shall apply.

This Memorandum of Understanding may be terminated by either party at any time but no such termination shall become effective until 30 days after the party not indicating the termination has been duly notified in writing. Upon termination, the activities of the parties shall be governed by the provisions of Section 1601 of the California Fish and Game Code.

Brian Hunter
Regional Manager
Department of Fish and Game

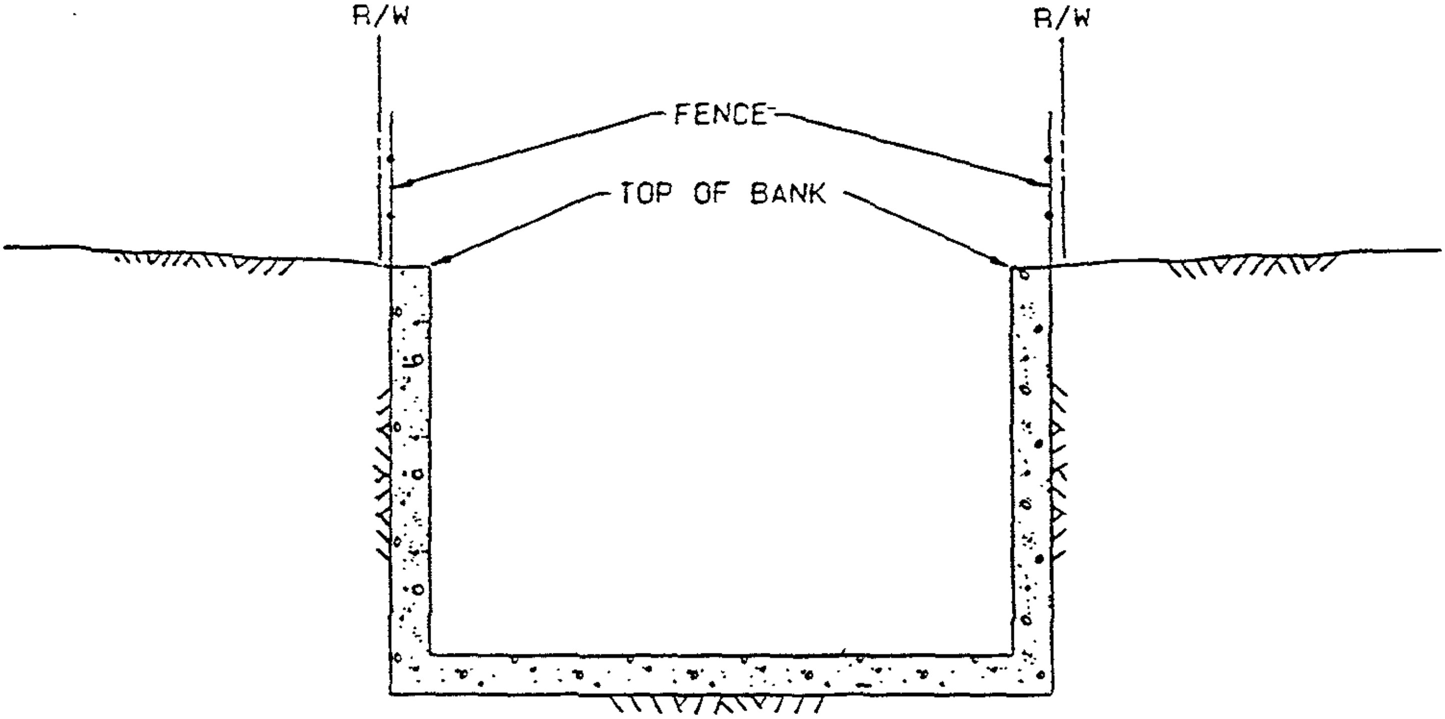
August 13, 1990
Date

Santa Clara Valley Water District
Maintenance Manager

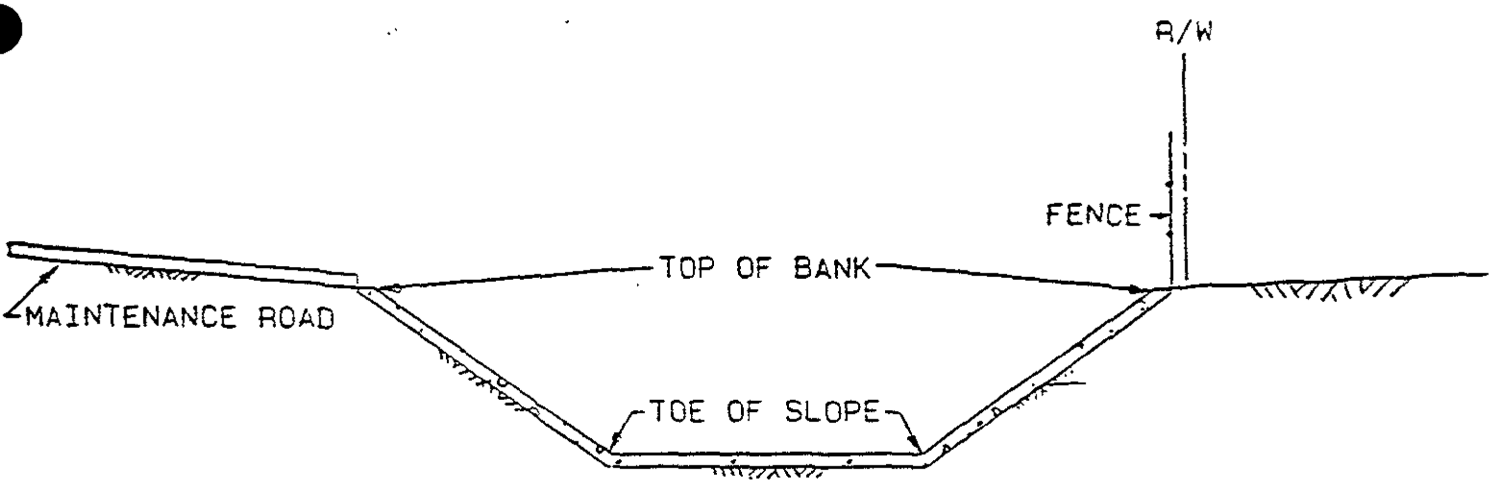
July 16, 1990
Date

Attachments

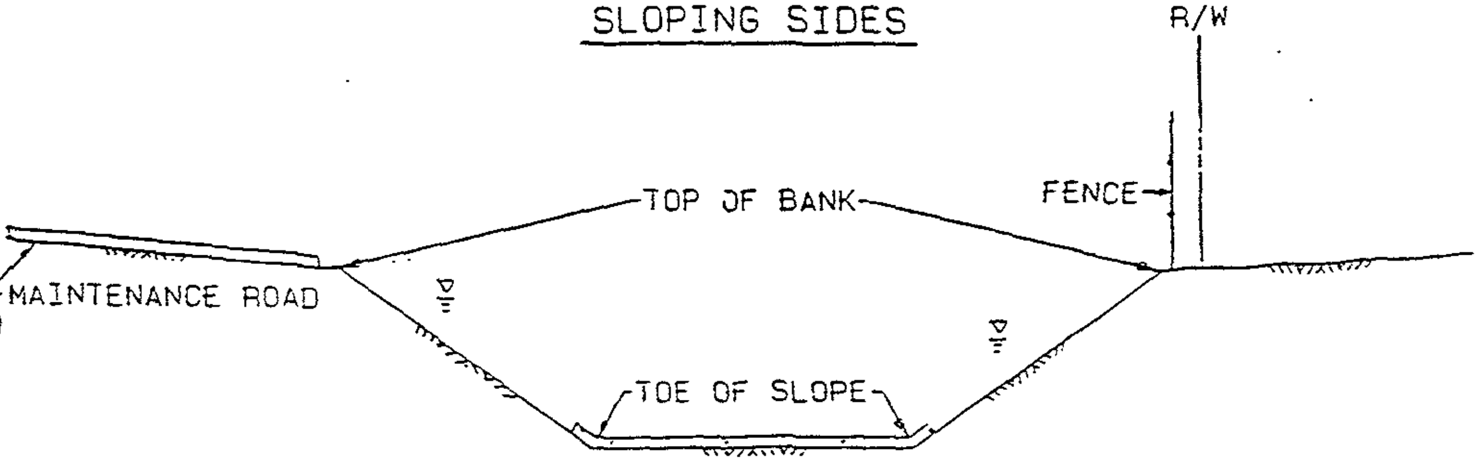
DIAGRAM NO. 1



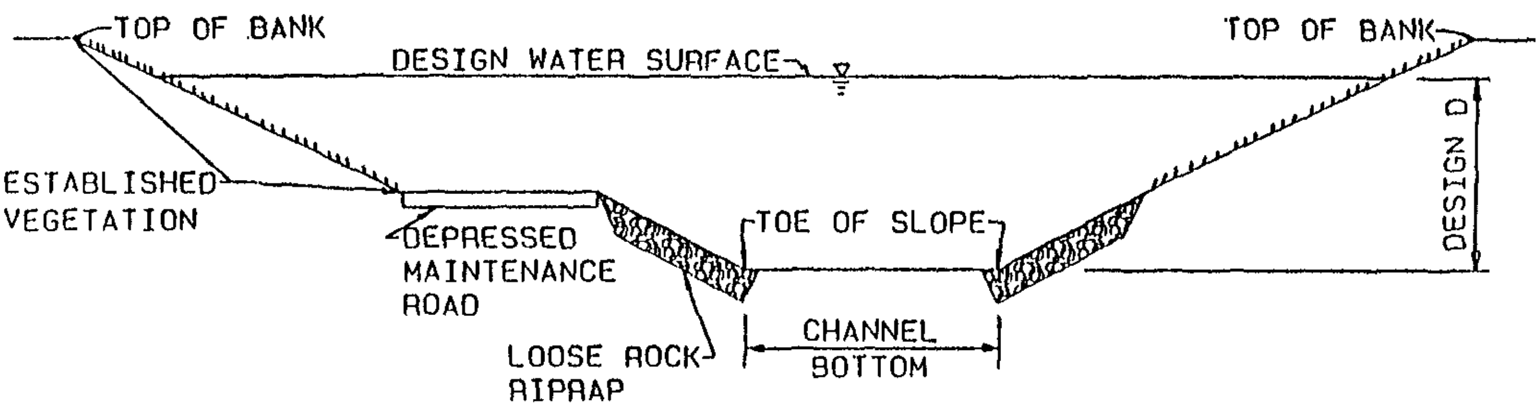
VERTICAL SIDES

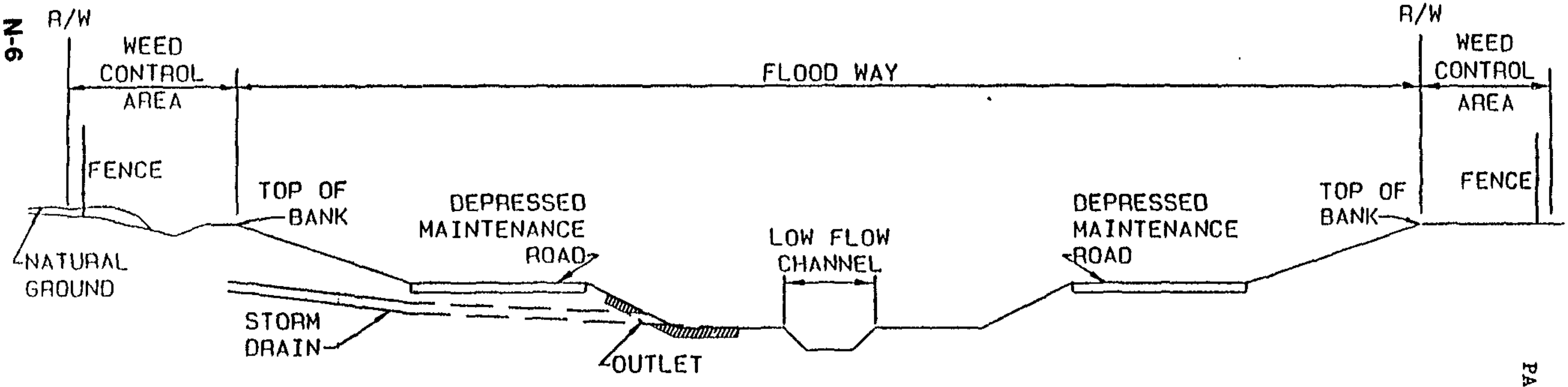


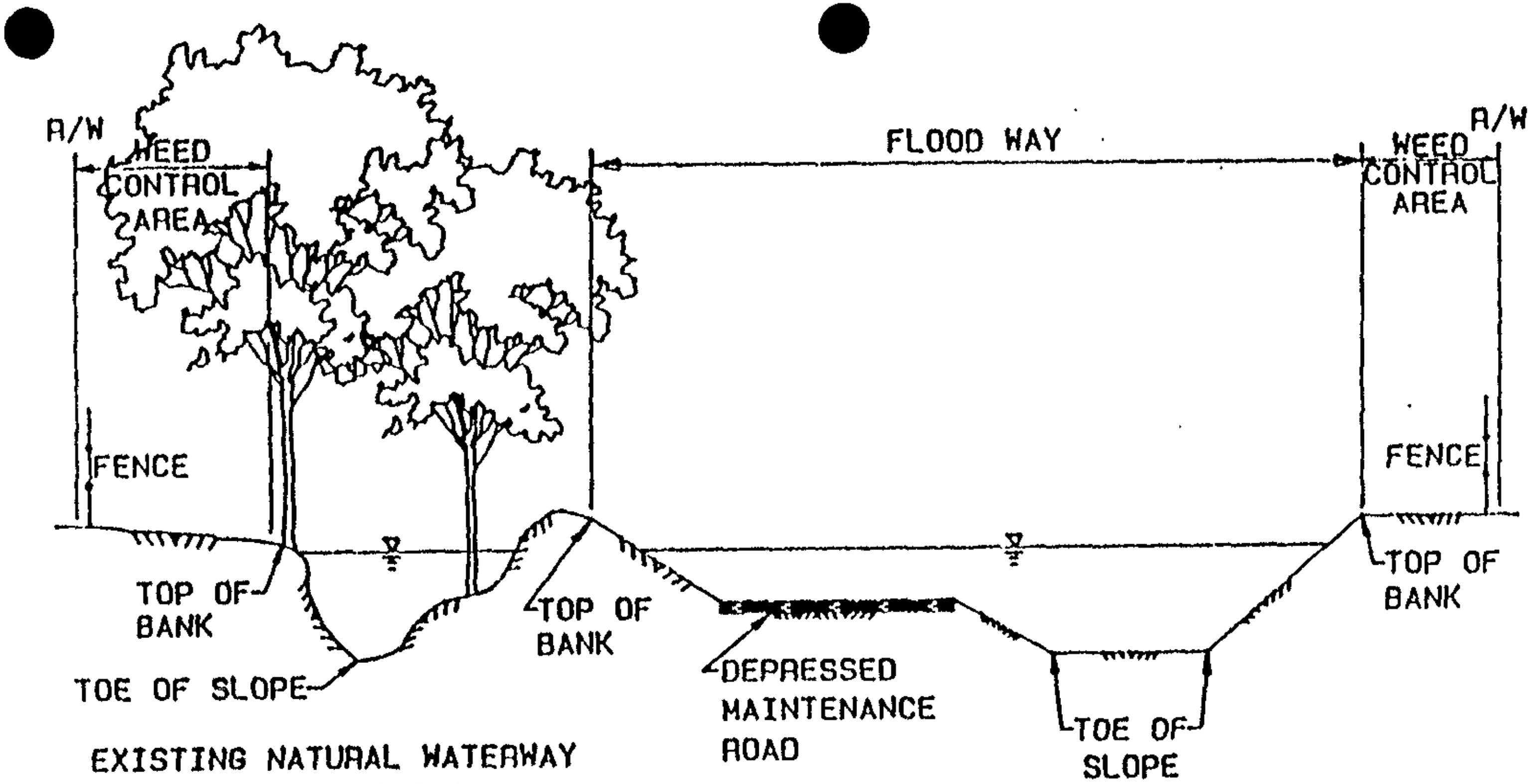
SLOPING SIDES



CONCRETE BOTTOM


TOP OF BANK
TOP OF BANK
DESIGN WATER SURFACE
DESIGN D
ESTABLISHED VEGETATION
DEPRESSED MAINTENANCE ROAD
TOE OF SLOPE
LOOSE ROCK RIPRAP
CHANNEL BOTTOM


R/W
R/W
WEED CONTROL AREA
FLOOD WAY
WEED CONTROL AREA
FENCE
FENCE
TOP OF BANK
TOP OF BANK
DEPRESSED MAINTENANCE ROAD
DEPRESSED MAINTENANCE ROAD
LOW FLOW CHANNEL
NATURAL GROUND
STORM DRAIN
OUTLET



EXISTING NATURAL WATERWAY
(LEAVE AS IS EXCEPT
FOR MINOR CLEARING).

CONSTRUCTED CHANNEL
TAKES REMAINDER OF FLOW.

APPENDIX A

NORTH WEST ZONE

Creek Name - Project No.		Beg. Sta. End. Sta.	D/S Limits U/S Limits	Reach Length (ft.)	Channel Type and Related Information	Applicable M.O.U. Items
Adobe Creek	1010	130+00 250+00	Highway 101 El Camino	12,000	Concrete Lined	A, C, F, H, J, N
Barron Creek	1012	0+00 10+00	Adobe Creek Confluence 1,000 ft. U/S Adobe Creek	1,000	Excavated Earth w/Sack Concrete Slope Protection	A, B, C, D, F, G, H, L, N
Barron Creek	1012	10+00 104+00	1,000 ft. U/S Adobe Creek El Camino Real	9,400	Concrete Lined	A, C, F, H, J, N
Barron Creek	1012	104+00 136+00	El Camino Real Laguna Avenue	3,200	Pipe	H, J
Deer Creek	1034	70+00 90+50	Arastradero Road Rhoda Drive	2,050	Excavated Earth w/Concrete Lined Bottom	A, B, C, F, G, H, J, N
Hale Creek	1016	0+00 57+00	Permanente Creek Confluence Rosita Drive	5,700	Concrete Lined	A, C, F, H, J, N
Heney Creek	1017	0+00 20+00	Stevens Creek Confluence U/S Highway 280	2,000	Pipe	H, J
Magdalena Creek	1020	0+00 23+00	Hale Creek Confluence Dawson Drive	2,300	Pipe	H, J

SANTA CLARA VALLEY WATER DISTRICT
AND
CALIFORNIA DEPARTMENT OF FISH AND GAME
MEMORANDUM OF UNDERSTANDING
ROUTINE MAINTENANCE ACTIVITIES IN UNIMPROVED CHANNELS

This Memorandum of Understanding by and between the California Department of Fish and Game, hereinafter called the "Department," and Santa Clara Valley Water District, hereinafter called the "District," is for the purpose of delineating and defining flood flow maintenance activities within unimproved channels that shall not require further Notice and Agreement in compliance with Section 1601 of the Fish and Game Code.

WHEREAS, Section 1601 of the Fish and Game Code empowers the Department to propose reasonable modifications to certain District construction projects as would allow for the protection and continuance of designated fish and wildlife resources and provides for Agreement with the Department on routine maintenance of District drainage and flood control facilities; and

WHEREAS, it is essential that the District perform flood flow maintenance activities within certain unimproved channels, to provide for flood flow movement through identified channels, to prevent loss of life and property; and

WHEREAS, it is mutually beneficial to delineate and define flood flow maintenance activities at specific locations within unimproved channels and to establish procedures to expedite these activities, and to provide for the protection of fish and wildlife habitat during such maintenance activities; and

WHEREAS, nothing in this Agreement shall constitute a waiver of any future or current Department claims to the use and maintenance of natural conditions under the public trust doctrine:

THEREFORE, the Department and the District do agree as follows:

I. DEFINITIONS

An unimproved channel is defined as a waterway in which significant man-made alterations have not occurred and which supports fish and wildlife resources.

Flood flow maintenance is defined as those activities within an unimproved channel which are needed regularly at the specific locations in order to pass flood flows through the channel while protecting adjacent properties.

Channel banks, channel bottom, and low flow channels are defined by reference to typical section and plan view as shown in Figures 1A and 1B attached hereto.

II. FLOOD FLOW MAINTENANCE

The activities identified below for the unimproved channel(s) shall constitute flood flow maintenance by definition and shall not require further notice to, or Agreement with, the Department. The channel reaches and work areas where maintenance activities are authorized by this Agreement, shall be as specified in Appendices "A" and "B" and as shown on Figures 2 through 5 attached hereto.

A. DEBRIS REMOVAL

Removal of fallen trees, substantial amounts of debris, rubbish, and other obstructions from areas of flow restriction. This work will be performed Countywide as needed.

B. VEGETATION CONTROL

Control of aquatic vegetation and woody growth of less than six inches diameter, measured at breast height (DBH), to remove obstructions to flow on the channel bottom from toe to toe, as shown on Figure 2; removal of non-native vegetation (bamboo, tree tobacco, castor bean, pampas grass, eucalyptus, acacia, etc.), including stump and root removal and/or chemical treatment where appropriate, from top of bank to top of bank, as shown on Figure 3; control of aquatic vegetation and woody growth of less than six inches DBH which restrict flow, by use of a mechanical brush cutter, in reaches of certain creeks specified in Appendix A. These activities will be performed in the reaches of channels listed in Appendix A, in accordance with the above-referenced figures.

C. EROSION CONTROL

1. Repair of Previous Work

Repair of failed rock, sacked concrete, or gabion sections. Project work will be confined to the failed section and adjacent areas affected by the failure. Upon project completion, channel bottom shall be scarified from the work site to the equipment entrance if and where equipment traffic has caused compaction of the streambed soil materials. This work will be performed Countywide as needed.

2. New Work

Project work will consist of installation of rock, gabions, or other erosion control measures excluding sacked concrete, as shown in Figures 4 or 5, from the toe of slope in the channel to a maximum of six feet, measured vertically, above the channel invert to stabilize the eroded area. The length of the project work will be less than 100 feet. Project work shall be limited to times when there is little or no streamflow. Should streamflow exist, the streamflow shall be diverted around the work area by a temporary culvert/pipe or by a low flow channel. Project work shall be performed in a manner which limits stream turbidity. Removal of vegetation will be minimized. Trees greater than six inches DBH will be protected where possible. The stream channel shall be returned as nearly as possible to its natural state without creating a possible future bank erosion problem. Upon project completion, channel bottom shall be scarified, from the work site to the equipment entrance, where equipment traffic has caused compaction of the streambed soil materials. Any work area left barren of vegetation as a result of the construction work shall be restored by seeding with native tree, shrub, and grass species to promote future growth. Erosion control will be confined to the specific locations listed in Appendix B.

III. TIME AND MANNER OF WORK

The flood flow maintenance work authorized by this Agreement may be performed at any time which shall meet the District's obligations to public health and safety while recognizing the need to minimize adverse impacts to fish and wildlife resources and their habitat. Periods of concern to the Department are March through June for nesting birds, and October through March for anadromous fish.

IV. REPORTING REQUIREMENTS

The Water District shall provide written notification to the Lieutenant Warden for Santa Clara County of the monthly schedule for that work tentatively proposed.

The Water District shall provide to the Regional Manager, Region 3, of the Department, written notification of maintenance projects completed within the preceding quarter (quarterly reports). A maintenance project is defined as an unimproved channel wherein one or more of the maintenance activities identified in this Memorandum of Understanding have been performed during any given reporting period. Due dates for submitting quarterly reports shall be as follows:

May 15	for first quarter projects	(January through March)
August 15	for second quarter projects	(April through June)
November 15	for third quarter projects	(July through September)
February 15	for fourth quarter projects	(October through December)

A fee payable to the Department shall accompany each quarterly report. The fee amount shall be in accordance with the current fee schedule, as published by the Department for work performed under a Memorandum of Understanding, based on the number of maintenance projects completed within a calendar year.

V. AMENDMENT AND TERMINATION

This Memorandum of Understanding may be amended at any time upon written Agreement of the parties. Pursuant to Section 1601, Agreements of the Department have been obtained by the District for the specific reaches on unimproved channels listed in Appendices A and B. If the District gives notice to and obtains the Agreement of the Department to maintain additional specific reaches on unimproved channels, in compliance with Section 1601, any such additional reaches will be added to Appendix A and/or B, and all provisions of this Agreement shall apply.

This Memorandum of Understanding may be terminated by either party at any time but no such termination shall become effective until 30 days after the party not indicating the termination has been duly notified in writing. Upon termination, the activities of the parties shall be governed by the provisions of Section 1601 of the California Fish and Game Code.

Regional Manager
Department of Fish and Game

5-15-91
Date

Maintenance Manager
Santa Clara Valley Water District

May 8, 1991
Date

Attachments

APPENDIX A

VEGETATION CONTROL

NORTHWEST ZONE

Creek Name	Proj. No.	Reach	
Adobe	1010	Sta. 363+00 to 463+00	O'Keefe Lane to Foothill Expressway
Adobe	1010	Sta. 480+00 to 535+00	Hwy. 280 to U/S Tepa
Heney	1017	Sta. 20+00 to 55+00	Hwy. 280 to U/S Salem
Permanente	1024	Sta. 256+00 to 439+00	Hale Creek to West Branch of Permanente
San Francisquito	1028	Sta. 320+00 to 380+00	San Mateo Drive to Willow Road
Stevens	1029	Sta. 218+50 to 566+00	Dana Street to McClellan Road
Summerhill	1031	Sta. 0+00 to 19+00	Hale Creek to U/S Gronwall
Purissima	1013	Sta. 5+00 to 15+00	Along O'Keefe Lane

NORTH CENTRAL ZONE

Creek Name	Proj. No.	Reach	
Calabazas	2010	Sta. 291+60 to 368+00 Sta. 385+00 to 444+04 Sta. 446+72 to 476+91 Sta. 477+92 to 630+00	Lawrence to Hwy. 280 Stevens Crk. Blvd. to D/S Bollinger U/S Bollinger to Blaney Drop Structure Blaney to U/S Comer
Regnart	2017	Sta. 106+00 to 140+00	Stelling Road to Bubb Road
Rodeo	2018	Sta. 75+10 to 100+00	SPRR to Saratoga-Sunnyvale Road
San Tomas	2019	Sta. 670+43 to 765+00	Pollard Road to Hwy. 9
Saratoga	2021	Sta. 140+00 to 170+00 Sta. 195+00 to 514+00	Pruneridge to Lawrence Hwy. 280 to Springer
Smith	2023	Sta. 71+00 to 93+00	Wedgewood to end of Bicknell
Wildcat		Sta. 6+50 to 10+00 Sta. 50+00 to 180+00	SPRR to Quito Road Portos Dr. to Peach Hill

CENTRAL ZONE

Creek Name	Proj. No.	Reach	
Los Gatos		Sta. 0+00 to 193+15	Guadalupe River to Bascom Ave. Mechanical brush cutting
		Sta. 470+00 to 508+00	D/S Blossom Hill to U/S Saratoga Ave.
Guadalupe River	3015	Sta. 580+00 to 857+00	Hwy. 880 to Canoas Creek
Ross	3023	Sta. 231+00 to 242+00	Camino Del Cerro to Linda Ave.
Randol	3029	Sta. 88+00+0 to 102+00	DE/S Foxhurst Way to end jurisdiction
West Branch Randol	3029	Sta. 0+00 to 15+00	Randol Creek to end jurisdiction

EAST ZONE

Creek Name	Proj. No.	Reach	
Calera	4018	Sta. 70+00 to 85+00	U/S Hwy. 680 to London Drive
Coyote	4021	Sta. 769+00 to 892+00	Hwy. 880 to Berryessa Road
Thompson	4047	Sta. 48+00 to 100+00	U/S Everdale to U/S Yerba Buena
Upper Penitencia	4032	Sta. 218+00 to 0+00	U/S Doral to Coyote Creek Ave.

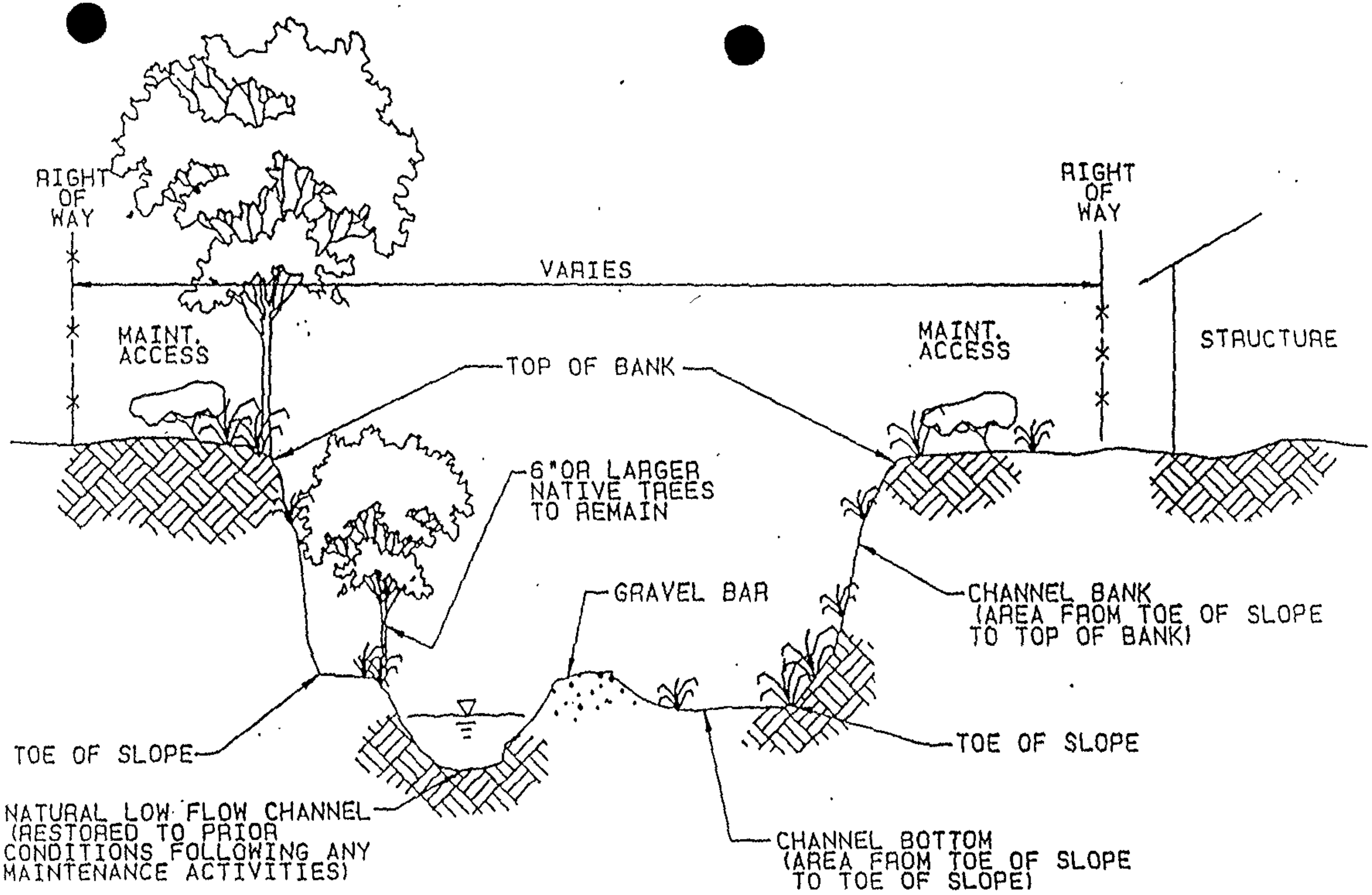
SOUTH ZONE

Creek Name	Proj. No.	Reach	
Llagas	5010	Sta. 200+00 to 1015+00	West Branch Llagas to Chesbro Res. Mechanical brush cutting
West Little Llagas	5012	Sta. 83+00 to 0 to 230+00	U/S Edmundson to end jurisdiction
Uvas	5018	Sta. 380+00 to 147+00	Thomas Road to Hwy. 25 Mechanical brush cutting
Pajaro River	5016		Llagas Creek to Santa Cruz County Line

APPENDIX B

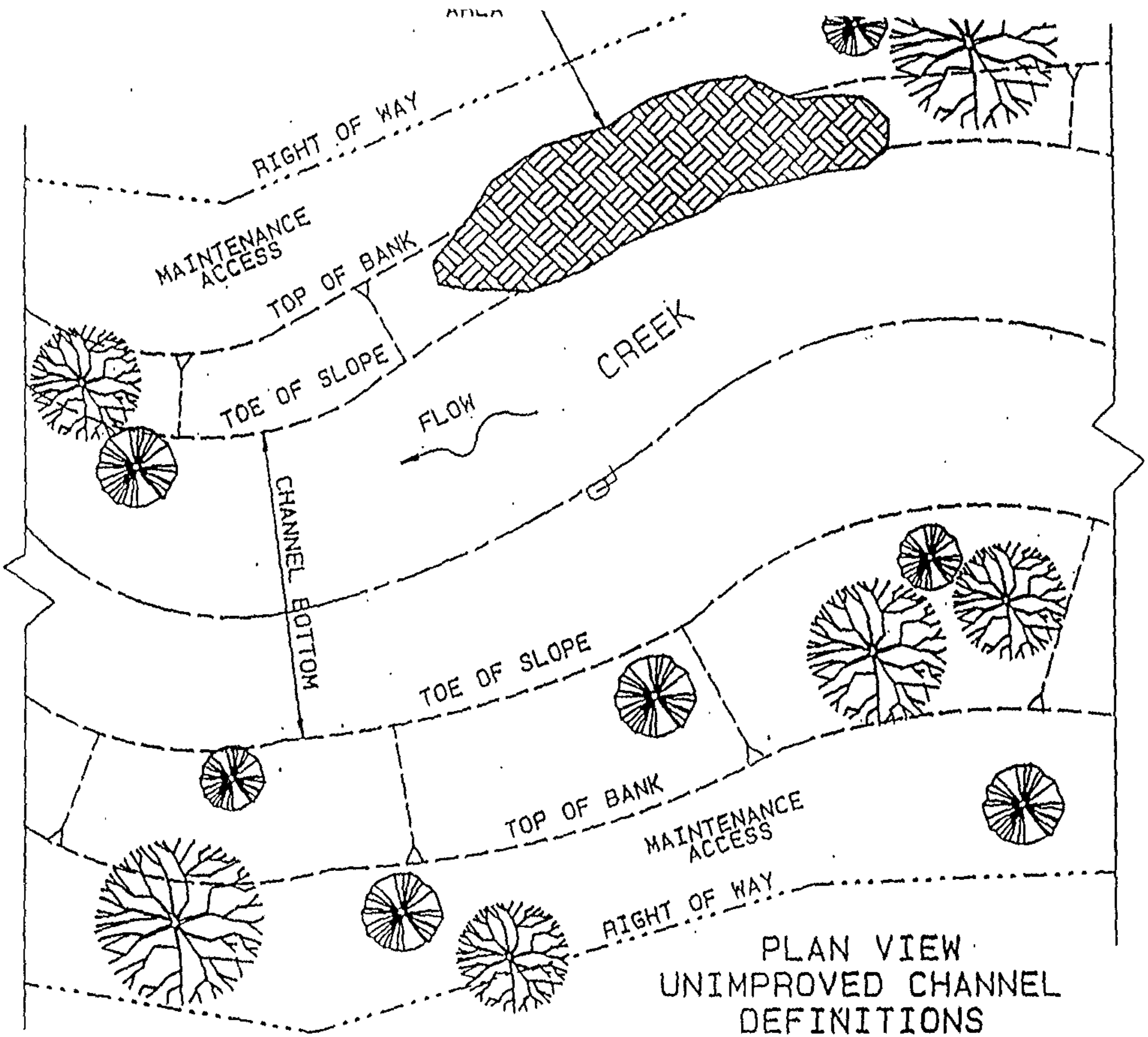
EROSION CONTROL

	Creek Name	Project No.	Reach
Northwest Zone	Adobe	1010	Sta. 250+00 to 385+00 El Camino Real to Edith
	Permanente	1024	Sta. 256+00 to 339+00 Hale Creek to Permanente Diversion
	Stevens Creek	1029	Sta. 310+00 to Sta. 505+00 Hwy. 85 to Stevens Creek Blvd.
North Central Zone	Calabazas	2010	Sta. 290+00 to 364+00 Lawrence Expwy. to Hwy. 280 Sta. 339+51 to 490+00 Miller Avenue to Rainbow Drive
	Saratoga	2021	Sta. 140+00 to 170+00 Pruneridge to Lawrence
	Wildcat	2030	Sta. 16+00 to 53+00 Vasona Crk. to Portos Dr.
Central Zone	Los Gatos	3020	Sta. 125+00 to 195+15 D/S Meridian to Bascom Ave.


RIGHT OF WAY
VARIES
RIGHT OF WAY
MAINT. ACCESS
MAINT. ACCESS
STRUCTURE
TOP OF BANK
6"OR LARGER NATIVE TREES TO REMAIN
GRAVEL BAR
CHANNEL BANK (AREA FROM TOE OF SLOPE TO TOP OF BANK)
TOE OF SLOPE
TOE OF SLOPE
NATURAL LOW FLOW CHANNEL (RESTORED TO PRIOR CONDITIONS FOLLOWING ANY MAINTENANCE ACTIVITIES)
CHANNEL BOTTOM (AREA FROM TOE OF SLOPE TO TOE OF SLOPE)

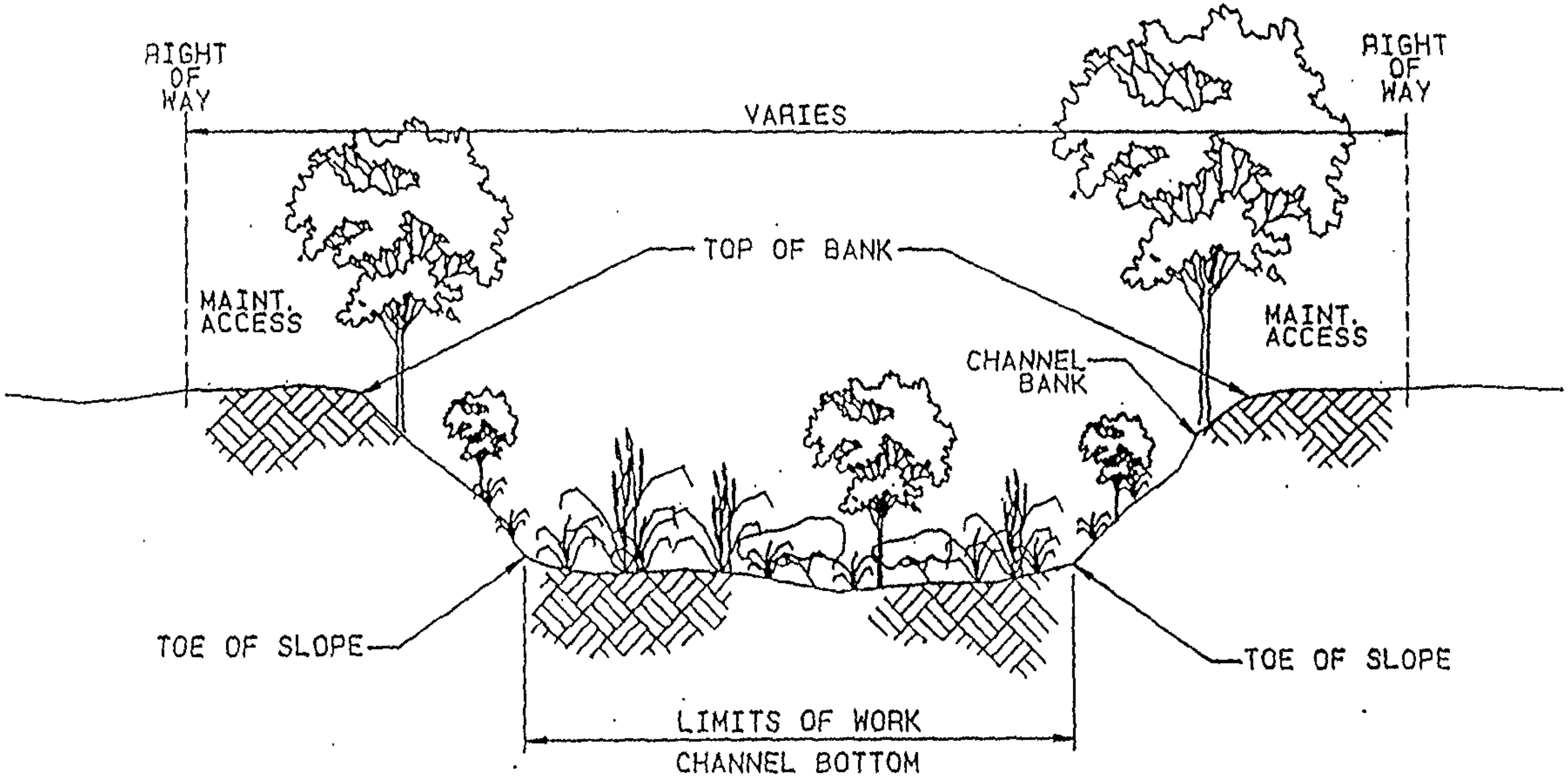
EXISTING NATURAL WATERWAY
UNIMPROVED CHANNEL
DEFINITIONS
NTS
FIGURE 1A

DATE: 2/21/91



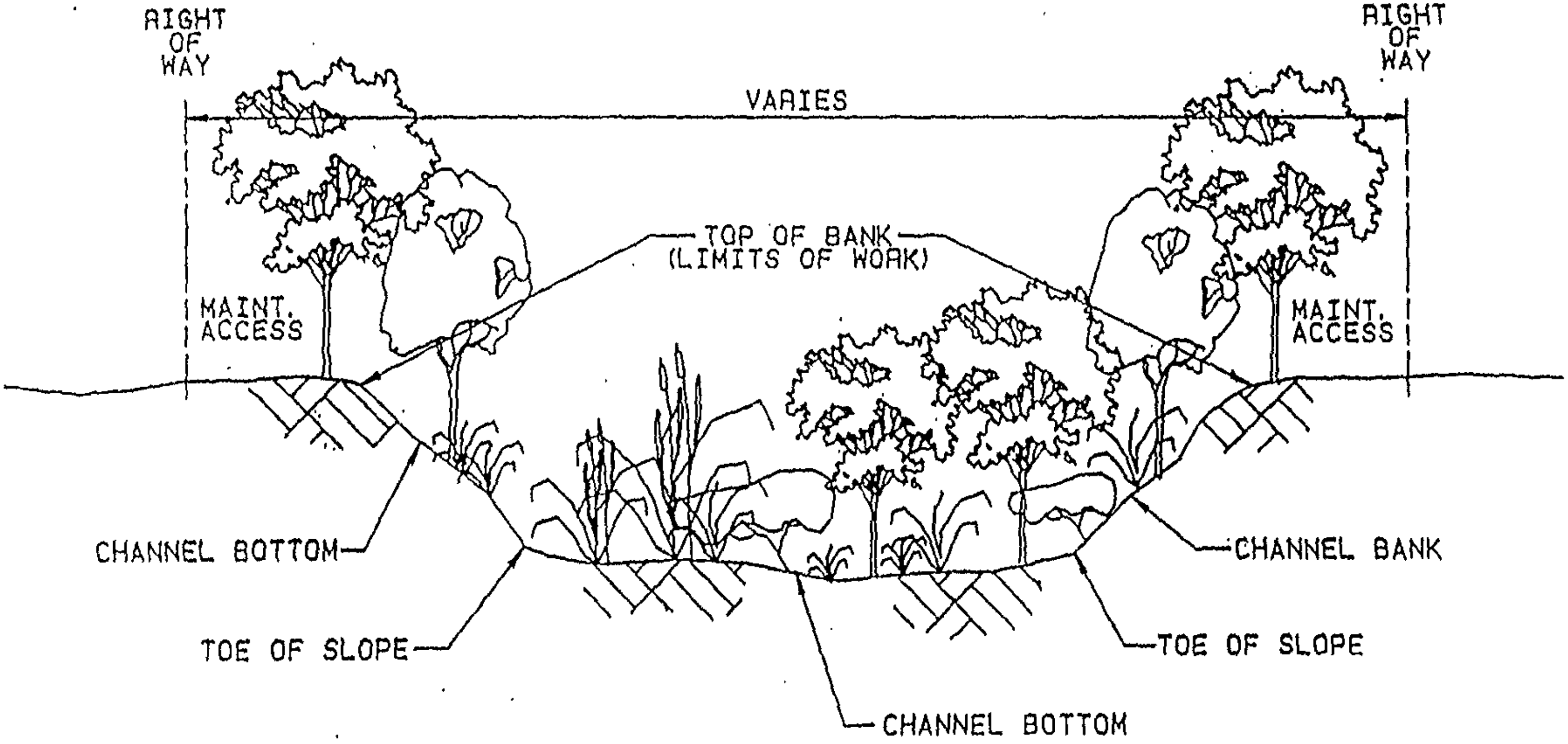
PLAN VIEW
UNIMPROVED CHANNEL
DEFINITIONS
NTS
FIGURE 1B

DATE: 2/21/91



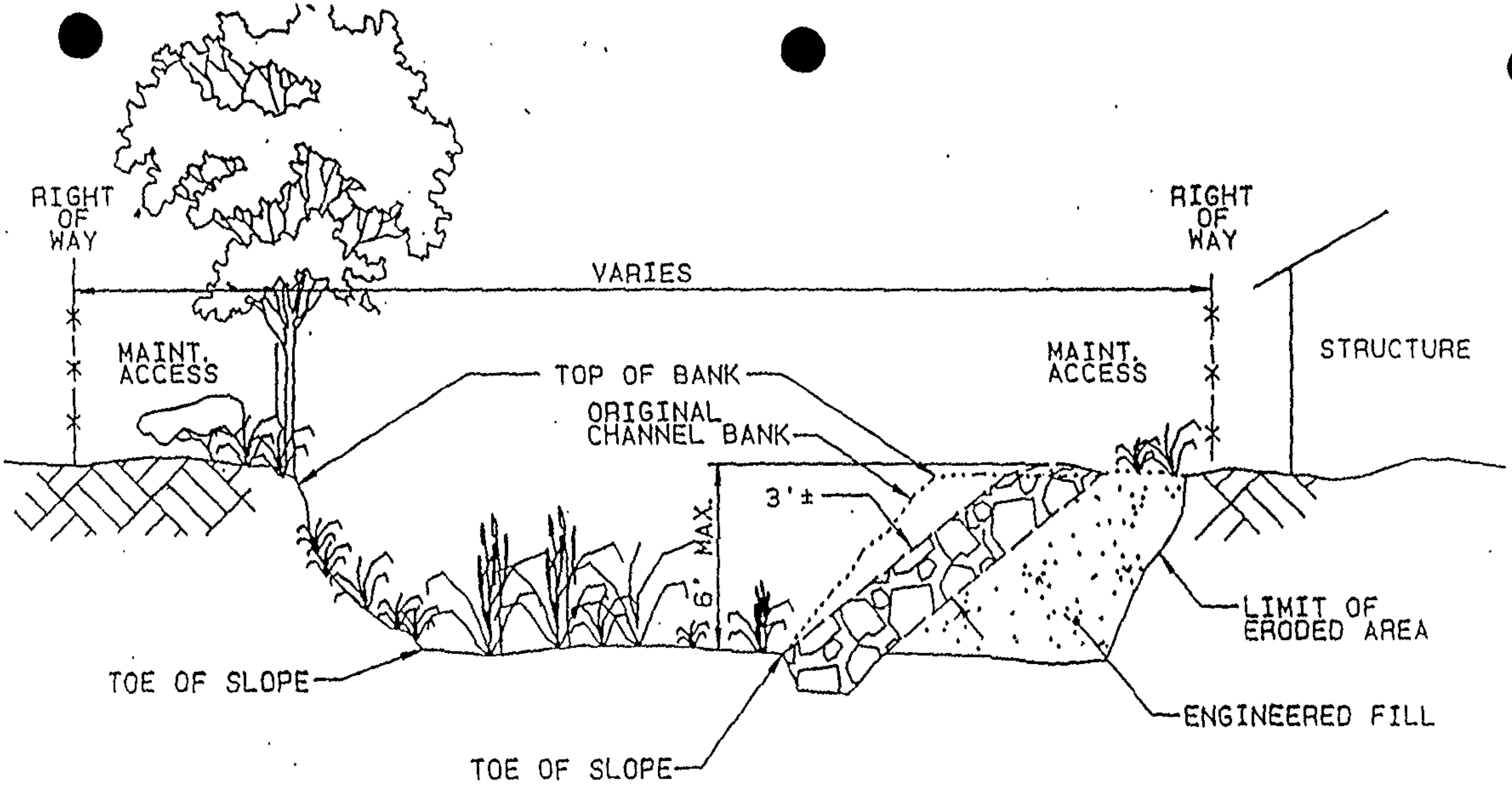
CONTROL OF AQUATIC VEGETATION
AND WOODY GROWTH FROM TOE TO TOE
NTS
FIGURE 2

DATE: 2/21/91



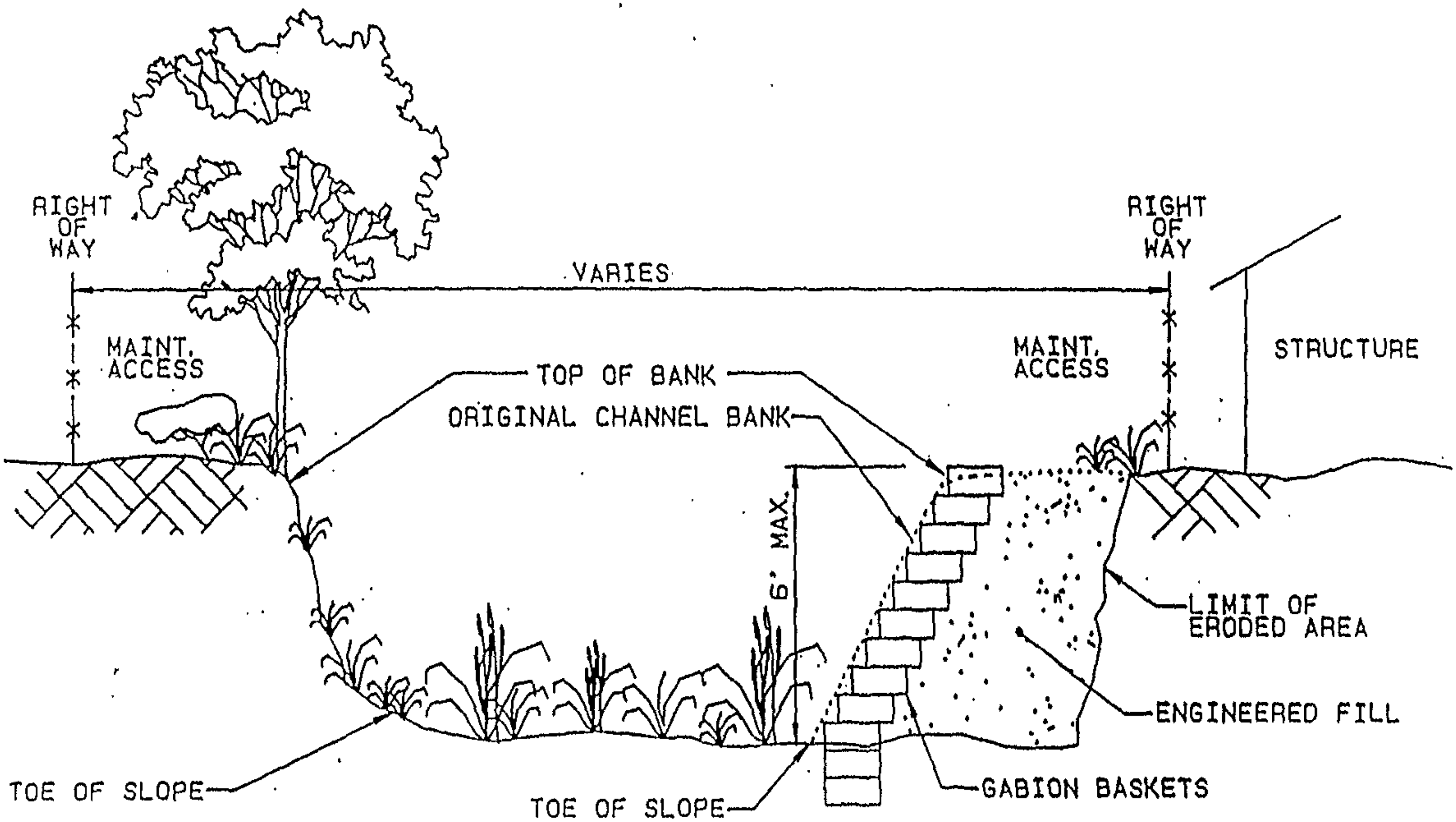
REMOVAL OF
NON-NATIVE VEGETATION
NTS
FIGURE 3

DATE: 2/21/91



ROCK SECTION
MAX. HEIGHT OF ROCK PROTECTION
6 FT. FROM TOE OF CHANNEL
MAX LENGTH OF ROCK
PROTECTION 100 FT.
NTS
FIGURE 4

DATE: 2/21/91



GABION SECTION
MAX HEIGHT OF GABION PROTECTION
6 FT. FROM TOE OF CHANNEL
MAX. LENGTH OF GABION PROTECTION 100 FT.
NTS
FIGURE 5

DATE: 2/21/91

APPENDIX O

BOARD OF DIRECTORS AGENDA ITEMS REGARDING ENVIRONMENTAL IMPACT REPORT AND ENGINEER'S REPORT

AGENDA MEMORANDUM

AGENDA DATE 10/22/96 ~~9/10/96~~ ITEM NO. 3 DEPARTMENT Water Resources Management

ZONE NW PROJECT NO. 1010 NAME Adobe Creek Watershed Planning Study

SUBJECT: Adobe Creek Watershed—Planning Study Consisting of Engineer's Report and Draft Environmental Impact Report
i) Resolution Setting Time and Place of Public Hearing

RECOMMENDATION:

That the Board: (1) Authorize filing the Notice of Completion of the Draft Environmental Impact Report; (2) Authorize circulation of the Draft Environmental Impact Report; and (3) Adopt the resolution providing for notice of time and place of public hearing on the Draft Environmental Impact Report.

RATIONALE:

This item was first presented to the Board on September 10 and was continued to October 22 to allow the Board members to familiarize themselves with the Engineer's Report and Draft Environmental Impact Report. Subsequent to that, the proposed project was discussed at the Northwest Flood Control Zone Advisory Committee meeting on September 18; at which time the Committee recommended the Board approve the project and expedite the proposed Reach 5 improvements.

This agenda memorandum describes proposed flood damage reduction measures on Adobe Creek upstream of El Camino Real and requests only that the Board release the Draft Environmental Impact Report to the public for review and set the date of the public hearing on the Draft Environmental Impact Report. Comments on the Draft Environmental Impact Report will be specifically treated in the Final Environmental Impact and must be received at the District office before the close of business on January 3, 1997. When all comments have a satisfactory response, the report will be presented to the Board for certification of the Final Environmental Impact Report and a public hearing on the Engineer's Report.

BACKGROUND/SUMMARY:

The current benefit assessment program in the Northwest Flood Control Zone was approved by voters in 1986. That program with current status is:

- Palo Alto Flood Basin (PAFB)—completed interim
- Stevens Creek, Dieriex Drive—ongoing purchases
- Adobe Creek, PAFB to El Camino—completed
- Matadero Creek—completed
- Barron Creek—completed
- Adobe, El Camino to El Monte—current study

(Continued from September 10, 1996)

AUTHORIZED
OCT 22 1996

- Permanente Creek—future study
- Hale Creek—future study with Permanente
- Permanente Diversion (Phase 2)—future study with Permanente
- San Francisquito Creek—future study (Recon 1996)

The attached Engineer's Report presents the existing water resource-related problems of the Adobe Creek watershed, including water quality and potential flooding. It is more extensive than most past studies because it attempts to respond to the demands from the public and regulatory agencies to address watershed-based problems in a more comprehensive manner.

The Engineer's Report and Draft Environmental Impact Report proposes flood damage reduction measures in the upper portion of Adobe Creek from El Camino Real to upstream of Moody Road. Downstream of El Camino Real, the creek has already been enlarged to the 100-year level of protection. The report proposes measures to increase flood protection, reduce creek bank erosion and sedimentation, and implement a comprehensive new maintenance program.

During the course of the study, staff sought public input through a series of meetings. The meetings consisted of a series of focused neighborhood meetings held from January 1992 to July 1993, to specifically address a controversial reach of the study downstream of West Edith Avenue (Reach 5). At the conclusion of the meetings, an alternative was selected by consensus of the local cities and residents. Due to the consensus process that was used to select the channel modification alternative in this reach, the Board should expect strong local support and requests to expedite construction in this reach. This is the same area where directors met with representatives from the Town Council to discuss possible joint purchase of the adjacent property for a multiuse park and flood protection facility.

In January and February 1994, public meetings were held to present the preferred project. A public map viewing of the final plan drawings was held in September 1995, the over 200 people that attended these meetings were generally supportive of the recommended plan.

Flooding can occur as often as every three years and caused damages in 1952, 1955, 1983, 1986, and 1995. A 100-year flood would affect approximately 220 structures. There are also continuing creek bank erosion and sedimentation problems, poor maintenance access, discontinuous maintenance rights of way causing maintenance implementation problems, and facility rehabilitation needs. Average annual flood damages are estimated to be $110,300; the average annual cost of the "no project" alternative is $555,400. This is the sum of average annual flood damages, erosion repair and rehabilitation, and ongoing maintenance costs.

Conceptual alternatives that have been evaluated during the planning process include "no project," nonstructural, upstream storage, offstream storage, and channel modification alternatives. The channel modification alternative was selected because it is practicable and achieves most of the District's goals and objectives. Other alternatives are considered infeasible and impracticable because of their high costs and they cause greater impacts to the vegetation and wildlife of the area.

Because of the nature of the flooding, channel modification alternatives considered included combinations of channel widening, bypass channels, multistage channels, and culvert additions and replacements. After evaluation of these alternatives based on environmental impact, cost, and impacts to residents along the creek, three alternative plans were formulated for further study: (1) the Minimum Vegetation Impact Plan, (2) the Riparian Functions and Values Plan, and (3) the Preferred Project. Least cost and no-project plans are presented in the report for comparison purposes.

The Minimum Vegetation Impact Plan is the combination of channel modifications which most avoids environmental impacts. The priority under the California Environmental Quality Act guidance is to first avoid impacts.

The Riparian Functions and Values Plan is the combination of channel modifications which most reestablish the function and value of the historic riparian corridor. This is accomplished by preserving and enhancing the existing vegetation, minimizing the need for creek bank protection and using flatter bank slopes to allow for natural revegetation, expanding riparian plantings, and creating large buffer areas. The intent of formulating this plan was to "bracket" the alternatives with an environmentally-sensitive plan. In general, it has a greater cost and larger impacted area. This is the plan which is most likely to receive support from the environmental community and regulatory agencies.

All three alternatives avoid and minimize vegetation impacts, reduce the flood hazard and improve water quality in the creek, solve erosion problems, improve maintenance access, provide fish passage in all areas of channel or culvert modification, and provide for a trail at Foothill College.

The preferred project is the combination of channel modifications that evolved from coordination with the Cities of Palo Alto and Los Altos, the Town of Los Altos Hills, and residents who own property in the floodplain or along the creek banks. The preferred project complements the Adobe Creek Restoration Plan developed in 1988 by the City of Los Altos, the Town of Los Altos Hills, and the Hidden Villa Trust.

The proposed project was selected because it provides one percent flood protection, where feasible to 147 homes, provides for public safety, and provides for creek stabilization while minimizing construction and maintenance costs, and overall impacts to the community and natural environment. The project will ". . . protect from damage from such flood or storm waters the watercourses, watersheds, public highways, life and property in said district . . ." as provided in the District Act. The project is a combination of channel modifications, culvert replacements, and creek bank erosion repairs. The study area was divided into 16 reaches. The channel modifications include enlarging the creek channel in two reaches, totaling 3,500 feet at West Edith Avenue and Foothill College. The remaining 14 reaches (37,000 feet) will continue to have different levels of flood protection varying from 10 to 100 years. The proposed plan includes three culvert replacements and one culvert addition. Also included in the plan are 5 new or upgraded existing maintenance access ramps, the repair of 17 creek bank erosion sites, the installation of 8 vortex rock weirs for grade stabilizers, and the modification of the entrance structure to a bypass channel.

SUBJECT: Adobe Creek Watershed—Planning Study Consisting of Engineer's Report and Draft Environmental Impact Report
i) Resolution Setting Time and Place of Public Hearing ~~9/10/96~~
10/22/96

The Draft Environmental Impact Report finds that the proposed project has 1.38 acres of significant impacts to vegetation. This will require 2.6 acres of mitigation.

In a separate effort, staff is preparing a scope of work for a two- to four-year study of a comprehensive flood management plan to define the District's program beyond the year 2000. Because the Adobe Creek watershed plan is very comprehensive and has had considerable public input, the project is expected to be fully compatible with any future program.

FINANCIAL IMPACT:

The proposed project will cost approximately $8 million, and project construction will be staged over several years. There are adequate funds available in the Northwest Flood Control Zone to complete this project.

(Continued from September 10, 1996)

RESOLUTION NO. 96-77

CALLING A PUBLIC HEARING ON DRAFT ENVIRONMENTAL IMPACT REPORT AND PROVIDING FOR NOTICE THEREOF

BE IT RESOLVED, by the Board of Directors of the Santa Clara Valley Water District as follows:

1. The Board of Directors finds it desirable to conduct a public hearing on the environmental impact of a proposed project, to wit: Proposed Flood Control Plan for Adobe Creek.
2. The public hearing shall be held at the time and place provided in the notice thereof hereinafter set forth; provided, that the same shall in no event be conducted sooner than fourteen (14) days after the filing and posting of the notice of completion of the draft Environmental Impact Report upon said proposed project.
3. The attached notice shall be published once in the San Jose Mercury News, Palo Alto Weekly, Los Altos Town Crier, and newspapers of general circulation within the Santa Clara Valley Water District, said publication to be done at least fourteen (14) days prior to the date set for public hearing.

PASSED AND ADOPTED by the Board of Directors of the Santa Clara Valley Water District on October 22, 1996, by the following vote:

AYES: Directors ~~T. ESTREMERA~~ R.W. GROSS ~~J. JUDGE~~ R. C. KAMEI J.J. LENIHAN S. SANCHEZ L. WILSON

NOES: Directors NONE

ABSENT: Directors T. ESTREMERA J. JUDGE

SANTA CLARA VALLEY WATER DISTRICT

By: ______________________

Chair/Board of Directors

ATTEST: LAUREN L. KELLER

Lauren L. Keller

Clerk/Board of Directors

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the Board of Directors of the Santa Clara Valley Water District (District) will conduct a PUBLIC HEARING on the environmental impacts of a proposed District project known as PROPOSED FLOOD CONTROL PLAN FOR ADOBE CREEK on the 12th day of December 1996, at the hour of 7:30 p.m. in the Multipurpose Room at the Hillview Community Center, 97 Hillview Avenue, Los Altos, California.

The Engineer's Report and Draft Environmental Impact Report is available for review at the District office at 5750 Almaden Expressway, San Jose, California, and at:

City Hall
City of Los Altos
One North San Antonio Road
Los Altos, CA 94022-3088

Town Hall
Town of Los Altos Hills
26379 Fremont Road
Los Altos Hills, CA 94022

Los Altos Main Library
13 South San Antonio Road
Los Altos, CA 94022-3088

City of Palo Alto Terman Park Library
661 Arastradero Road
Palo Alto, CA 94303

City Hall
Planning Department—Fifth Floor
Public Works—Sixth Floor
City of Palo Alto
250 Hamilton Avenue
Palo Alto, CA 94301

Foothill Community College Library
12345 El Monte Road
Los Altos Hills, CA 94022

City of Palo Alto Main Library
1213 Newell Road
Palo Alto, CA 94303

Said draft Environmental Impact Report will be used as the basis for discussion at said hearing.

Comments on the Draft Environmental Impact Report will be specifically treated in the Final Environmental Impact Report, MUST BE IN WRITING, and must be received at the District office before the close of business on January 3, 1997.

All persons in any way interested in or affected by said proposed project are invited to be present and to participate in the hearing process.

Dated: 10/23/96

Lauren L. Keller

Lauren L. Keller
Clerk of the Board

Final Environmental Impact Report

ADOBE CREEK
WATERSHED PROJECT

Santa Clara Valley Water District

May 1999

SANTA CLARA VALLEY WATER DISTRICT

ADOBE CREEK WATERSHED PROJECT FINAL ENVIRONMENTAL IMPACT REPORT

Project No. 1010

Final Environmental Impact Report
Prepared under the Direction of

Terry Neudorf	Environmental Planner II
Vickie Germany	Environmental Planner II
Scott Wilson	Associate Civil Engineer

Nai Hsueh
Water Resources Manager

P. Kay Whitlock
Assistant General Manager

Stanley M. Williams
General Manager

Final Environmental Impact Report

Prepared by

H.T. Harvey and Associates

and

David J. Powers and Associates, Inc.

May 1999

ADOBE CREEK WATERSHED PROJECT
FINAL EIR
TABLE OF CONTENTS

PAGE

PREFACE

EIR SUMMARY v

I. DESCRIPTION OF THE PROPOSED PROJECT 1

- A. BACKGROUND OVERVIEW 1
- B. PROJECT LOCATION 3
- C. PROJECT OBJECTIVES 3
- D. DETAILED DESCRIPTION OF THE PROPOSED PROJECT 3
  - Channel Modifications and Culvert Replacements 5
  - Erosion Repair Modifications 11
  - Maintenance Program 11
  - Construction Phasing 17
- E. CONSISTENCY WITH PLANS, GOALS AND POLICIES 18
  - 1. Federal Policies 18
  - 2. State Policies 19
  - 3. Regional and Local Plans and Policies 20
- F. USES OF THE EIR 24

II. ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES 26

- A. LAND USE 26
  - 1. Existing Setting 26
  - 2. Impacts 38
  - 3. Mitigation 41
- B. GEOLOGY 41
  - 1. Existing Setting 41
  - 2. Impacts 44
  - 3. Mitigation 44
- C. HYDROLOGY, DRAINAGE AND FLOODING 45
  - 1. Existing Setting 45
  - 2. Impacts 46
  - 3. Mitigation 46
- D. VEGETATION AND WILDLIFE 47
  - 1. Existing Setting 47
  - 2. Impacts 66
  - 3. Mitigation 82
- E. WATER QUALITY 104
  - 1. Existing Setting 104
  - 2. Impacts 104
  - 3. Mitigation 105

PAGE

F. HAZARDOUS MATERIALS 106
  1. Existing Setting 106
  2. Impacts 113
  3. Mitigation 114
G. CULTURAL RESOURCES 114
  1. Existing Setting 114
  2. Impacts 115
  3. Mitigation 115
H. VISUAL AND AESTHETICS 116
  1. Existing Setting 116
  2. Impacts 117
  3. Mitigation 118
I. CONSTRUCTION-RELATED IMPACTS 121
  1. Existing Setting 121
  2. Impacts 121
  3. Mitigation 127
J. UTILITIES 128
  1. Existing Setting 128
  2. Impacts 128
  3. Mitigation 129
K. CUMULATIVE IMPACTS OF THE PROPOSED PROJECT 129
  1. Impacts 129
  2. Mitigation 131

III. ALTERNATIVES TO THE PROPOSED PROJECT 133

A. NO PROJECT ALTERNATIVE 133
B. WEST EDITH AVENUE BOX CULVERT BYPASS/ARMORED LOW-FLOW CHANNEL ALTERNATIVE 134
C. WEST EDITH AVENUE WIDENED EARTHEN CHANNEL ALTERNATIVE 135
D. FOOTHILL COLLEGE WIDENED EARTHEN CHANNEL ALTERNATIVE 139
E. ENVIRONMENTALLY SUPERIOR ALTERNATIVE 142

IV. SIGNIFICANT, UNAVOIDABLE IMPACTS OF THE PROJECT 143

V. IRREVERSIBLE ENVIRONMENTAL CHANGES AND IRRETRIEVABLE COMMITMENT OF RESOURCES 143

VI. GROWTH INDUCING IMPACTS OF THE PROPOSED ACTION 143

VII. SCOPING AND COORDINATION WITH AGENCIES AND PUBLIC 144

VIII. LIST OF PREPARERS 145

IX. REFERENCES 146

X. PERSONS CONSULTED 149

TABLE OF EXHIBITS

FIGURES **PAGE**

Figure 1 Regional Location Map 2
Figure 2 Vicinity Map and Creek Improvement Reaches 4
Figure 3 Project Site Map 6
Figure 4 Plan View of Proposed Project at West Edith Avenue 8
Figure 5 Plan View of Proposed Project at Foothill College 10
Figure 6 Reaches 1 and 2 28
Figure 7 Reaches 3 and 4 29
Figure 8 Reaches 5 and 6 31
Figure 9 Reaches 7 and 8 32
Figure 10 Reaches 9 and 10 34
Figure 11 Reaches 11 and 12 36
Figure 12 Reaches 13 and 14 37
Figure 13 Reaches 15 and 16 39
Figure 14 Primary Fault Zones in the San Francisco Bay Area 43
Figure 15 Mitigation Sites Location Map 85
Figure 16 Plan View of Foothill Expressway Mitigation Site 86
Figure 17 Cross-Section of Foothill Expressway Mitigation Site 87
Figure 18 Plan View of West Edith Avenue Channel Modification Mitigation Site 89
Figure 19 Cross-Section of West Edith Avenue Channel Modification Mitigation Site 90
Figure 20 Plan View of West Edith Avenue Park Mitigation Site 91
Figure 21 Cross-Section of West Edith Avenue Park Mitigation Site 93
Figure 22 Plan View of Foothill College Channel Modification Mitigation Site 94
Figure 23 Cross-Section of Foothill College Channel Modification Mitigation Site 95
Figure 24 Plan View of Adobe Creek Estates Mitigation Site (West) 96
Figure 25 Cross-Section of Adobe Creek Estates Mitigation Site (West) 98
Figure 26 Plan View of Adobe Creek Estates Mitigation Site (East) 99
Figure 27 Cross-Section of Adobe Creek Estates Mitigation Site (East) 100
Figure 28 Soil Sampling Locations 111
Figure 29 Photo-Simulation of Proposed Modifications at West Edith Avenue 119
Figure 30 Photo-Simulation of Proposed Modifications at Foothill College 120
Figure 31 Plan View of West Edith Avenue Widened Earthen Channel Alternative 136
Figure 32 Cross-Section of West Edith Avenue Widened Earthen Channel Alternative 137
Figure 33 Plan View of Foothill College Widened Earthen Channel Alternative 140
Figure 34 Cross-Section of Foothill College Widened Earthen Channel Alternative 141

TABLES

Table 1 Erosion Repair Sites 12
Table 2 One Percent and Ten Percent Flood Flows 45
Table 3 Habitat Acreages 50
Table 4 West Edith Avenue Channel Modification Site Habitat Acreages 53
Table 5 Foothill College Channel Modification Site Habitat Acreages 54
Table 6 Culvert Replacement Sites Habitat Acreages 56
Table 7 Erosion Repair Sites Habitat Acreages 57
Table 8 Special Status Species That Could Occur at Adobe Creek 61

TABLES (continued) **PAGE**

Table 9 Corps and CDFG Jurisdictional Acreages 67
Table 10 Cut and Fill Within Corps and CDFG Jurisdiction 75
Table 11 Riparian Corridor Impacts Summary 77
Table 12 Riparian Corridor Impacts by Reach 78
Table 13 Total Tree Stem Loss Within Stream Associated Habitats 79
Table 14 Culvert Replacement Site Impacts 79
Table 15 Erosion Repair Site Impacts 80
Table 16 Resurfacing of Banks That Are Not Currently Artificial 81
Table 17 Impacts Summary and Mitigation Requirements 82
Table 18 Impacts Summary and Mitigation Requirements by Reach 83
Table 19 Mitigation Site Acreages 84
Table 20 Mitigation Species 101
Table 21 Pre-and Post-Project Biotic Conditions Summary 103
Table 22 Regulatory Listings Searched 107
Table 23 Facilities Identified on Regulatory Listings 108
Table 24 Properties Potentially Affected by Project Construction 122
Table 25 Typical Noise Levels of Construction Equipment 125
Table 26 Impacts of Alternatives 135

APPENDICES

APPENDIX A MAINTENANCE PROGRAM BEST MANAGEMENT PRACTICES

APPENDIX B GEOLOGIC REVIEW

APPENDIX C BIOLOGICAL APPENDICES

APPENDIX D IDENTIFICATION OF WATERS OF THE UNITED STATES

APPENDIX E HAZARDOUS MATERIALS REPORT

APPENDIX F CULTURAL RESOURCES EVALUATION

APPENDIX G NOTICE OF PREPARATION AND INITIAL STUDY AND RESPONSES TO NOTICE OF PREPARATION

APPENDIX H RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT

- H-I List of Agencies and Individuals Commenting on the Draft EIR
- H-II Responses to Comments Received on the Draft EIR
- H-III Revisions to the Text of the EIR as a Result of Comments on the Draft EIR
- H-IV Draft EIR Mailing List
- H-V Minutes, Santa Clara Valley Water District, Board of Directors Meeting (Public Hearing-Draft EIR), December 12,1996

PREFACE

The Santa Clara Valley Water District (District) has determined that an Environmental Impact Report (EIR) is required for the proposed Adobe Creek Watershed Project. The District has prepared this document in conformance with the California Environmental Quality Act (CEQA) Guidelines. This EIR provides information, to assist public agency decision makers and the public to make informed decisions about the environmental impacts of this project.

In conformance with the CEQA Guidelines, the EIR provides objective information regarding the environmental consequences of the proposed project, and identifies possible means for avoiding, minimizing, and mitigating impacts. The EIR also examines various alternatives to the project to reduce or eliminate significant environmental impacts. The following guidelines are included in CEQA to clarify the role of an EIR:

> **15121(a) Information Document.** An EIR is an informational document which will inform public agency decision makers and the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR, along with other information which may be presented to the agency.
>
> **15151 Standards for Adequacy of an EIR.** An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision, which intelligently considers environmental consequences. An evaluation of the environmental effects of the proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

According to CEQA amendments, the purpose of an EIR is to identify the significant impacts of a project on the environment. The amendments define significant to be *a substantial adverse impact on the environment.* This EIR, therefore, discusses those impacts with the potential to have significant adverse impacts. This EIR also evaluates different areas of impact for each issue that is examined, depending upon the magnitude of the effect, as stated in Section 15143 of the CEQA Guidelines.

Section 15126(c) of the amended CEQA Guidelines states that *the discussion of mitigation measures shall distinguish between the measures that are proposed by project proponents to be included in the project, and other measures that are not included but could reasonably be expected to reduce adverse impacts.* Thus, this EIR distinguishes between those mitigation measures included in the proposed project, and those that are not, but may be considered by the decision makers to be included in whole or in part as conditions of project approval.

EIR SUMMARY

ADOBE CREEK WATERSHED PROJECT

SUMMARY DESCRIPTION OF PROPOSED PROJECT

The Santa Clara Valley Water District (District) proposes a capital improvement plan to reduce flooding and erosion, control sedimentation, and a new maintenance program for Adobe Creek upstream of El Camino Real to Moody Road, in Santa Clara County. The project portion of Adobe Creek flows through the Cities of Los Altos, Palo Alto, and the Town of Los Altos Hills. The proposed project consists of three elements: 1) limited channel modifications to increase flood protection; 2) creekbank and channel bottom erosion repairs; and 3) adoption of a new maintenance program. Please refer to the table below for a summary of the project components.

OVERVIEW OF ADOBE CREEK PROJECT COMPONENTS

Reach	Limits of Reach	Capital Improvements		Erosion Repair		Maintenance Program
		Channel Modification	Culvert Replacement	Bank Stabilization	Bottom Stabilization	
1	El Camino Real to Hetch-Hetchy Pipeline		✓	✓	✓	✓
2	Hetch-Hetchy to Alta Mesa Cemetery			✓		✓
3	Alta Mesa Cemetery to Yerba Buena Ave.			✓	✓	✓
4	Yerba Buena Avenue to Foothill Expwy.		✓	✓	✓	✓
5	Foothill Expressway to West Edith Avenue	✓	✓	✓		✓
6	West Edith Avenue to Burke Road					✓
7	Burke Road to Manresa Way		✓			✓
8	Manresa Way to O'Keefe Lane			✓		✓
9	O'Keefe Lane to I-280		✓			✓
10	I-280 to Foothill College Entrance					✓
11	Foothill College Entrance to El Monte Road	✓				✓
12	El Monte Road to Tepa Way			✓	✓	✓
13	Tepa Way to Rhus Ridge Road	✓	✓			✓
14	Rhus Ridge Road to Francemont Avenue					✓
15	Francemont Avenue to Murietta Lane					✓
16	Murietta Lane to Upstream Moody Road (End of Project)					✓

SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION

The following discussion summarizes the primary impacts of the proposed Adobe Creek Watershed Planning Study. The reader is referred to the main body of this EIR for detailed discussions of the environmental setting, impacts, and mitigation measures.

THE FOLLOWING IMPACTS WERE DETERMINED TO BE POTENTIALLY SIGNIFICANT.

IMPACTS	MITIGATION
Land Use	
Construction of the proposed channel modifications would result in the removal of 67 parking spaces in Parking Lot A at Foothill College. (**Significant Impact**)	The District would relocate and replace on the campus the 67 parking spaces removed from Foothill College Parking Lot A that would result from construction of the proposed channel modifications. (**Less-than-significant Impact with Mitigation**)
The project would not result in any loss of open space or substantially change the existing character or land uses in the area. However, the project may result in general disruption upon adjacent residential uses during construction activities, including noise, dust, privacy, and property damage impacts, some of which may be potentially significant. These impacts are described under **Construction-Related Impacts.** **(Potentially Significant Impact)**	Please refer to the Construction-Related Impacts section for mitigation proposed for potentially significant land use impacts associated with construction of the proposed channel modifications. (**Less-than-significant Impact with Mitigation**)
Geology	
The project could result in geologic impacts, associated primarily with slope instability. (**Potentially Significant Impact**)	A standard geologic investigation of the project sites where there is a potential for geotechnical hazards (as identified in the preliminary study, refer to Appendix B) shall be conducted, and the District will follow specific recommendations made to mitigate potential geotechnical hazards along the channel prior to project construction, which may include excavation dewatering, shoring and bracing, and other stabilizing measures. (**Less-than-significant Impact with Mitigation**)

Vegetation, Wildlife and Fish

IMPACTS	MITIGATION
Implementation of the proposed project would result in the loss of a total of 1.4 acres of habitat within the riparian corridor. **(Potentially Significant Impact)**	Mitigation for impacts to vegetation is based on ratios linked to the value of the riparian vegetation impacted (see **Section II., D., Vegetation and Wildlife**, of this EIR). Additional acreage is provided as a mitigation bank for the general maintenance program. The project would provide a total of 2.64 acres of mitigation, and has identified five potential mitigation sites, which together could provide the required mitigation. **(Less-than-significant Impact with Mitigation)**
The project would involve the installation of gabions, riprap, geocell, and sacked concrete slope protection on channel banks, which would result in a loss of native substrate (e.g. soil) and inhibit the establishment of native vegetation (both landscaping or natural recolonization). **(Potentially Significant Impact)**	Impacts due to resurfacing of channel banks would be mitigated by establishing new riparian habitat. The mitigation described above for impacts to riparian habitat includes mitigation acreage for the loss of soil channel banks. **(Less-than-significant Impact with Mitigation)**

Water Quality

IMPACTS	MITIGATION
The proposed modifications in the Adobe Creek channel would expose bare soils and could result in increased erosion, turbidity, and sedimentation during project construction. The increased sedimentation potentially generated could degrade the quality of water in the creek and the Palo Alto Flood Basin by transporting other pollutants adhered to sediments, or adversely affecting biological resources. **(Potentially Significant Impact)**	Potential water quality impacts would be reduced by the implementation of best management practices, including the following: 1) project construction during periods of low creek flows; 2) implementation of temporary erosion control measures during construction; and 3) stabilization and/or revegetation of disturbed areas of the channel after construction. In addition, the repair of eroded banks and installation of other creekbed and bank stabilization measures should reduce the quantity of sediment that erodes into the creek. **(Less-than-significant Impact with Mitigation)**

Cultural Resources

IMPACTS	MITIGATION
Future maintenance activities could potentially impact two archaeologically sensitive sites located between O'Keefe Lane and Manresa Way within the project boundary. **(Potentially Significant Impact)**	In the unlikely event future maintenance activities require excavation of the channel bank in either of the two sensitive areas near O'Keefe and Manresa, an archaeological testing program would be conducted by a qualified archaeologist prior to construction. If significant cultural resources are found, recommendations of the archaeological program would be followed (i.e. the analysis of recovered materials, laboratory cataloging, and a report of findings. **(Less-than-significant Impact with Mitigation)**
The project could impact four known archaeological or cultural resource sites centered adjacent to, but not within, the project area. **(Potentially Significant Impact)**	The four areas of potential cultural resources identified in the cultural resources investigation would be monitored by a qualified archaeologist during project construction. In the event that prehistoric or historic resources are encountered, all construction within a fifty meter radius of the find would be stopped, the District notified, and an archaeologist retained to examine the find and make appropriate recommendations for the District to follow. **(Less-than-significant Impact with Mitigation)**
Although no cultural resources were identified on the remainder of the project site, construction of the project could uncover subsurface cultural resources. **(Potentially Significant Impact)**	A qualified archaeologist would review further soils testing at the site to determine if topsoils and/or midden deposits have been covered by the existing surface material prior to construction. In the event that any indicators of cultural deposits are discovered, the archaeologist would make further recommendations for their delineation and/or evaluation for the District to follow. **(Less-than-significant Impact with Mitigation)**

Construction-Related Impacts

Construction of proposed channel modifications, which may include the use of a pile driver to install foundation support, could result in property damage impacts upon adjacent residences and utilities. **(Potentially Significant Impact)**	In areas where foundation support is necessary and the use of a pile driver would impact nearby residences or utilities, drilled piers would be used rather than a pile driver. Any impacts to existing structures would be repaired or replaced by the District. **(Less-than-significant Impact with Mitigation)**

ALTHOUGH THE FOLLOWING IMPACTS WERE DETERMINED TO BE LESS THAN SIGNIFICANT, MITIGATION IS PROPOSED TO FURTHER REDUCE THE POTENTIAL IMPACTS IN SOME CASES.

IMPACTS	MITIGATION
Land Use	
Mitigation required to offset the project's riparian impacts would involve the use of private and public lands at up to six locations. Public access to the mitigation sites would be limited. **(Less-than-significant Impact)**	No mitigation required. **(Less-than-significant Impact)**
Geology	
The project site is subject to strong groundshaking in the event of an earthquake on any of the active faults in the area. **(Less-than-significant Impact)**	All new culverts and other proposed channel structures would be constructed in accordance with appropriate building code standards to withstand groundshaking and seismic hazards. **(Less-than-significant Impact)**
Vegetation and Wildlife	
The project would result in the minor loss of habitat suitable for several special-status animal species which may occasionally occur in the riparian habitats along the project alignment. **(Less-than-significant Impact)**	No mitigation required. **(Less-than-significant Impact)**
The project could possibly impact California red-legged frogs that have been washed into the project area during storm events. However, such storm-washed frogs are not expected to survive because of inadequate habitat. **(Less-than-significant Impact)**	Project construction would occur during the dry season; any frogs washed into the project area would be expected to perish. Although it is considered highly unlikely that frogs would be present, preconstruction surveys would be performed at the Foothill College site, and the Corps would initiate a Section 7 (Endangered Species Act) consultation with the U.S. Fish and Wildlife Service (USFWS) during the project's permit process, if necessary. **(Less-than-significant Impact)**

IMPACTS	MITIGATION
Vegetation and Wildlife (cont.)	
The project would result in the loss of some vegetation that provides partial channel shading along up to 1,975 linear feet of the creek channel. However, vegetation that would remain in most of these areas will continue to provide creek shading. Loss of shading can affect stream temperatures and fisheries resources. However, minimal effects on stream temperatures are not considered a relevant issue for resident fish in the project area. **(Less-than-significant Impact)**	The project includes the reestablishment of over 1,900 linear feet of plantings on the creek banks where most of the tree removal would occur. There would be a temporary loss of channel shading until this vegetation is reestablished; however, this is not considered a significant impact, given the fisheries resources on the creek (see **Section II., D., Vegetation and Wildlife**, of this EIR). **(Less-than-significant Impact)**
Project construction would modify the channel bed materials and configuration in a number of locations. This could impact fisheries resources on the creek by eliminating undercut pool habitat or inhibiting upstream or downstream fish movement. The project would eliminate some shallow undercut pools next to gunite or concrete channel segments at Foothill College and West Edith Avenue that provide shelter to fish and potential fisheries habitat. However, these gunite and concrete channel segments are currently impassable to fish, including steelhead. **(Less-than-significant Impact)**	The District would provide drop structures that are passable to steelhead at both the Foothill College and West Edith Avenue sites. The current channel modification site designs would replace the present segments with structures that are passable. The loss of a small amount of shallow undercut pool habitat is more than offset by the project's replacement of existing migration barriers with structures that are passable to steelhead. The project would thereby provide steelhead with potential access to habitat within and upstream of the project area that was previously inaccessible if barriers downstream of the project reach are removed. **(Beneficial Impact with Mitigation)**
Although no raptor nests were observed during the biological surveys, project construction could impact nesting raptors. **(Less-than-significant Impact)**	Preconstruction surveys for raptor nests would be performed. In the unlikely event that a nest is reported in the project area prior to, or during construction, a qualified biologist and the appropriate agencies would be consulted to identify appropriate mitigation measures. **(Less-than-significant Impact)**
The project would result in the removal of approximately 0.57 acres of developed area and 0.49 acres of landscaped/non-native habitat not associated with the riparian corridor. These habitat types are not considered sensitive habitats and the loss of these habitats would not significantly affect biotic resources. **(Less-than-significant Impact)**	No mitigation required. **(Less-than-significant Impact)**

Vegetation and Wildlife (cont.)

IMPACTS	MITIGATION
The project would result in the loss of 10 ordinance size trees outside the riparian corridor. This does not represent a significant biological impact. **(Less-than-significant Impact)**	The removal of 10 ordinance size trees would require a permit from the municipality. The project may be required by the municipalities to provide tree removal plans prior to construction and to obtain tree removal permits. **(Less-than-significant Impact)**
The project would result in the covering of existing native channel bed with riprap or gabions at channel modification sites. **(Less-than-significant Impact)**	The project would result in a net loss of natural channel bed, but not in habitat value, since the areas to be resurfaced have low aquatic habitat value, and the riprap channel bottom would fill with sediment allowing for the establishment of groundcovers and emergent vegetation. **(Less-than-significant Impact)**
Routine vegetation clearing conducted in accordance with the project's Maintenance Program could result in the loss of approximately 4,650 square feet (0.11 acres) of overhanging shrubs (primarily Himalayan blackberry). Occasionally, small amounts of the branches and shrubs would also be cut and sprayed with herbicides. Given the limited vegetation removal, quick regrowth of the plants, and the absence of significant dependent wildlife resources, this impact would not be significant. **(Less-than-significant Impact)**	No mitigation required. **(Less-than-significant Impact)**

Hazardous Materials

IMPACTS	MITIGATION
Construction of the proposed channel modifications could remove or uncover sediments containing hazardous substances. **(Less-than-significant Impact)**	The District would develop and implement a soil profiling plan to evaluate the chemical nature of sediments to be removed. This plan would determine the location and quantity of sediments to be excavated and determine soil reuse and disposal options. **(Less-than-significant Impact)**

IMPACTS	MITIGATION
Hazardous Materials (cont.)	
The project area could be impacted by nearby, identified contaminated sites near Morningside Drive and The Trust for Hidden Villa properties. **(Less-than-significant Impact)**	The following measures would ensure that areas of potential contamination do not impact the project: 1) the domestic landfill near The Trust for Hidden Villa property would be removed from the creekbed by the District if any excavation is required in this area; 2) the discharge of septic leachate near Morningside Drive was referred to the Santa Clara County Health Department for enforcement action and was corrected. **(Less-than-significant Impact)**
Visual Impacts	
The project would alter the visual character of the creek channel at some locations along the project reach. However, the proposed modifications would not be visually intrusive, and in some cases, may improve the visual quality of the area. ***(Less-than-significant* Impact)**	No mitigation required. **(Less-than-significant Impact)**
Construction-Related Impacts	
The project would result in a temporary increase in truck traffic through residential areas. However, any truck trips would avoid neighborhood streets to the greatest extent possible. **(Less-than-significant Impact)**	No mitigation required. **(Less-than-significant Impact)**
Construction of the proposed culvert replacements under the major roadways could temporarily affect traffic movement or congestion. **(Less-than-significant Impact)**	A detour plan would be implemented to minimize potential traffic impacts on the major roadways during culvert replacement. **(Less-than-significant Impact)**

Construction-Related Impacts (cont.)

IMPACTS	MITIGATION
The project would result in temporary short-term air quality impacts (dust) during construction. **(Less-than-significant Impact)**	Measures would be implemented to reduce the short-term, construction-related dust impacts such as: 1) suspension of earthmoving or other dust-producing activities during high winds; 2) watering of all exposed or disturbed soil surfaces at least twice daily; 3) watering or covering of soil stockpiles or other wind-blown materials; 4) sweeping of paved construction areas and adjacent streets of mud and debris; and 5) limiting the speed of all construction vehicles to 15 miles per hour while on site. **(Less-than-significant Impact)**
The project would result in temporary short-term noise impacts during construction. **(Less-than-significant Impact)**	The following measures would be implemented to minimize short-term, construction-related noise impacts: 1) limiting construction activities to Monday - Saturday from 7:00 AM to 6:00 PM; and 2) using construction equipment in good mechanical condition with adequate mufflers. **(Less-than-significant Impact)**
The project may result in short-term privacy and security impacts on homes adjacent to the areas of construction on the creek. **(Less-than-significant Impact)**	The District would install temporary construction fencing to replace any backyard fences removed during construction to provide security and privacy. Permanent fences would be replaced in kind. **(Less-than-significant Impact)**

Utilities

Project construction would require the relocation of utility lines where culvert and bridge replacements are proposed, which could result in short-term service interruptions, or possible damage to the utility line. **(Less-than-significant Impact)**	All underground utilities would be relocated during project construction as necessary. In the unlikely event that any utilities are damaged, they would be repaired and/or replaced by the District's contractor or owner of utility. **(Less-than-significant Impact)**

IMPACTS	MITIGATION
Cumulative Impacts	
The project construction would impact a total of approximately 2,000-2,500 linear feet of Adobe Creek and temporarily contribute to the loss of riparian vegetation in the Santa Clara Valley. Due to the temporary nature of these impacts and since all impacts to riparian habitat would be fully mitigated, the project would not contribute to a significant cumulative impact upon biological resources. **(Less-than-significant Impact)**	The project would provide a total of 2.64 acres of riparian mitigation to offset impacts to vegetation and wildlife and would result in no net loss of riparian vegetation. **(Less-than-significant Impact)**
Hydrology and Drainage	
The proposed channel modifications are designed to provide improved flood control and erosion protection along the creek channel. The project also includes the adoption of a maintenance program for these modifications, resulting in a beneficial effect upon the hydrology of Adobe Creek. **(Beneficial Impact)**	No mitigation required. **(Beneficial Impact)**

SUMMARY OF ALTERNATIVES

The CEQA Guidelines (Section 15126) state that Environmental Impact Reports (EIRs) must describe a range of reasonable alternatives to a project or project location that could feasibly attain the basic project objectives, and they must evaluate the alternatives' comparative merits. This EIR analyzes several alternatives to the proposed project in Section III. A brief summary of these alternatives and their impacts is provided below.

No Project The No Project Alternative consists of not constructing the proposed channel modifications and leaving the project site in its existing condition with the existing maintenance activities. The No Project Alternative would avoid the adverse impacts identified for the proposed project, but would also eliminate the benefits of the project upon erosion and flood control. Under the No Project Alternative, residents and businesses within the floodplain would continue to face potential flooding problems.

West Edith Avenue Box Culvert Bypass/Armored Low Flow Channel This alternative consists of constructing a 10-foot reinforced double box culvert under Fremont Road, which would extend for approximately 1,025 feet along Reach 5 of the project. This alternative also includes the installation of 1.5 foot by 3-foot gabions on both banks of the creek following the existing alignment, and rock riprap on the channel bottom. Concrete cutoff walls would be installed at the toe of both banks. This alternative would result in similar impacts to the proposed project at West Edith Avenue. However, it would require large entrance and exit structures for the culverts, making this alternative more costly and time consuming to construct than the proposed project. This alternative would also result in land use and geologic impacts to the park and the Rogez property due to grading and possible property damage. In addition, the West Edith Avenue Box Culvert Bypass/Armored Low Flow Channel Alternative would result in temporary traffic impacts upon the residents of Los Altos Hills. This alternative is being evaluated as an alternative to the proposed project at the request of the residents adjacent to the proposed project.

West Edith Avenue Widened Earthen Channel Alternative This alternative would expand the width of the creek channel and the overflow floodbench on the right (west) bank.[a] The earthen channel bottom would be widened to 20 feet, the creek banks would be laid back to a 2:1 slope, and an 80-foot wide overflow floodplain would be excavated above the right bank. This alternative would eliminate the need for riprap, gabions, sacked concrete slope protection or other "hard" materials, with the exception of several narrow bands of riprap that would be imbedded in the channel bed to control erosion. This alternative would provide for a more complete restoration of riparian habitat along the creek than the proposed project design. From a biological perspective, this alternative would be superior to the proposed project.

---

[a] For the purposes of this report, references to right and left bank are oriented looking upstream.

SUMMARY OF ALTERNATIVES
(Continued)

This alternative would result in significant land use impacts upon the Rogez property at West Edith Avenue and require the purchase of the entire property for a cost of over $2 million. Due to the excessive cost of purchasing the entire Rogez property, this alternative was not chosen as the preferred alternative.

Foothill College Widened Earthen Channel Alternative. This alternative consists of constructing a 130-foot wide excavated earthen channel that contains a sinuous 10-foot wide low flow channel along Reach 11 of the project. The creek channel portion would be stabilized by buried bands of rock groins, which would extend across the bench to form the meanders of the creek. This alternative would replace the existing creek channel with a meandering low-flow channel in a wide floodplain. The floodplain would be excavated from the large parking lot flanking the creek's right (west) bank (Parking Lot A). As compared to the proposed project, this alternative would eliminate the use of riprap, gabions, sacked concrete slope protection or other "hard" materials, with the exception of several narrow bands of riprap imbedded in the channel bed to control erosion and maintain the position of the low flow channel. This alternative would provide for a more complete restoration of riparian habitat along the creek than the proposed project design. From a biological perspective, this alternative is superior to the proposed project. However, this alternative would result in a significant land-use impact upon Foothill College by requiring the removal of a substantial portion (287 spaces or 65 percent) of the parking area. Due to the excessive cost to mitigate the loss of parking, this alternative was not chosen as the preferred alternative.

AREAS OF CONTROVERSY

Because the proposed project would affect the stream environment along Adobe Creek, which is considered a valuable ecological resource, there is some controversy regarding the biological impacts upon riparian habitat along the affected portions of the creek. In addition, concerns have been raised by the local community on the effects of the project upon their properties adjacent to the creek. In order to address these concerns, this EIR specifically assesses the potential impacts of the project upon the biotic resources and adjacent land uses in the project area. The District and this EIR consider various alternatives to the proposed project to potentially reduce environmental impacts. The information contained in this EIR will be used by the Board of Directors of the Santa Clara Valley Water District, as well as by other responsible agencies, (e.g., U.S. Army Corps of Engineers, California Department of Fish and Game, California Regional Water Quality Control Board) to consider this project, taking into account all the relevant factors.

SECTION I

DESCRIPTION OF THE PROPOSED PROJECT

A. BACKGROUND OVERVIEW

The Santa Clara Valley Water District (District) proposes a capital improvement plan to modify the channel, construct erosion repair and sediment control measures, and provide future maintenance of Adobe Creek upstream of El Camino Real to upstream of Moody Road, in Santa Clara County (refer to Figure 1). Adobe Creek originates in the northeastern slopes of the Santa Cruz Mountains, near Monte Bello Ridge, and drains an area of approximately 10.84 square miles. Approximately 3/4 of the watershed area is mountainous, while 1/4 of the watershed is located in the urbanized Santa Clara Valley floor. The creek flows for 14.7 miles through the cities of Los Altos, Mountain View, Palo Alto, and the Town of Los Altos Hills. Adobe Creek ultimately flows into San Francisco Bay through the Palo Alto Flood Basin, a 600-acre tidal basin regulated by a tidal gate.

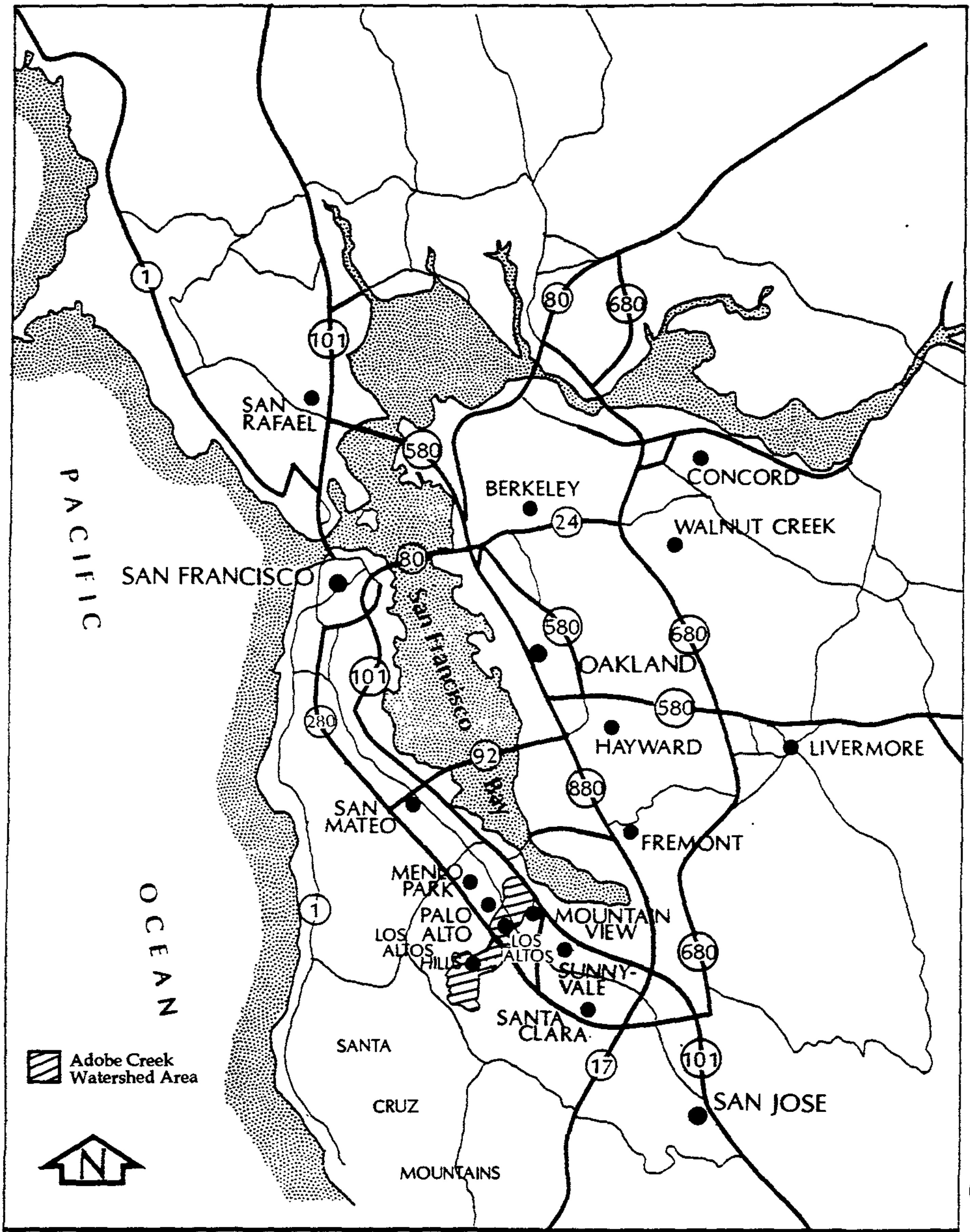
Adobe Creek has a long history of flooding. The upper reaches of the creek in its natural state had a well-defined channel that meandered down a sloping alluvial plain. Historic flooding occurred as overbanking, with any overflow continuing along the channel course. Since the 1950's, there have been many changes made to the creek channel alignment. The creek was moved from a meandering alignment across an historic floodplain to a straightened channel at the edge of development. The realignment of the creek adjacent to development and inadequate capacity resulted in significant flooding in 1952, 1955, 1983, and 1986. Some flooding also occurred in 1995 and 1998. In the lower portion of Adobe Creek (downstream of El Camino Real), the creek was channelized in the 1950's to protect development in the floodplain. Upstream of El Camino Real, Adobe Creek has not been channelized and has problems including localized flooding, creekbank erosion, sedimentation, and failing channel stabilization structures.

The policy of the District is to design flood control improvements to contain the one percent flood[1] with appropriate freeboard[2]. Only one-third to one-half of the creek upstream of El Camino Real has the capacity to contain the one percent flood. Eleven of the 19 existing culverts along Adobe Creek within the project area are inadequate to convey one percent flood flows. The District estimates that approximately 220 structures would currently be flooded by a one percent event, resulting in damages of approximately $2.7 million. Over the long-term, average annual flood damage in the project area is expected to be about $110,300 and flood damages are projected to occur as frequently as every three years.

---

[1] The one percent flood, also referred to as the 100-year flood, has a one percent statistical probability of occurring in any year, or a return period of 100 years. The occurrence of a one percent event in any year does not change the probability of a one percent flood occurring in succeeding years. The one percent event is the standard set by the Federal Emergency Management Agency (FEMA), which is responsible for administration of the National Flood Insurance Program. The District has adopted the one percent level as its design standard.

[2] "Freeboard" refers to the height between the projected water surface elevation during the one percent flood flow and the top of the bank/levee. The purpose of freeboard is to create a safety or buffer zone in order to ensure that flood flows are conveyed without blockage, damage to structures, and/or flooding of adjacent areas.



REGIONAL MAP FIGURE 1

The District currently performs maintenance and erosion repair activities on Adobe Creek on an emergency, as-needed basis. This has resulted in high channel maintenance costs for sediment and debris removal, vegetation control, and erosion repair. These maintenance costs have averaged approximately $62,000 per year.

Maintenance activities conducted on Adobe Creek have been authorized by the U.S. Army Corps of Engineers (Corps) under the terms of a permit issued pursuant to Section 404 of the Federal Clean Water Act. The most recent Corps Section 404 permit has expired. Renewal of the Corps Section 404 permit will require the issuance of a water quality certification by the California Water Resources Control Board which requires compliance with CEQA. The project would also require a Streambed Alteration Agreement with the California Department of Fish and Game (CDFG) to conform with Section 1601 of the California State Fish and Game Code. The project would also need to comply with the requirements of the National Pollution Discharge Elimination System (NPDES) permit for the RWQCB for nonpoint source pollution. For a detailed discussion of the project's consistency with relevant Federal, State, and local policies and regulations, refer to **Section I., E., Consistency with Plans, Goals, and Policies.**

B. PROJECT LOCATION

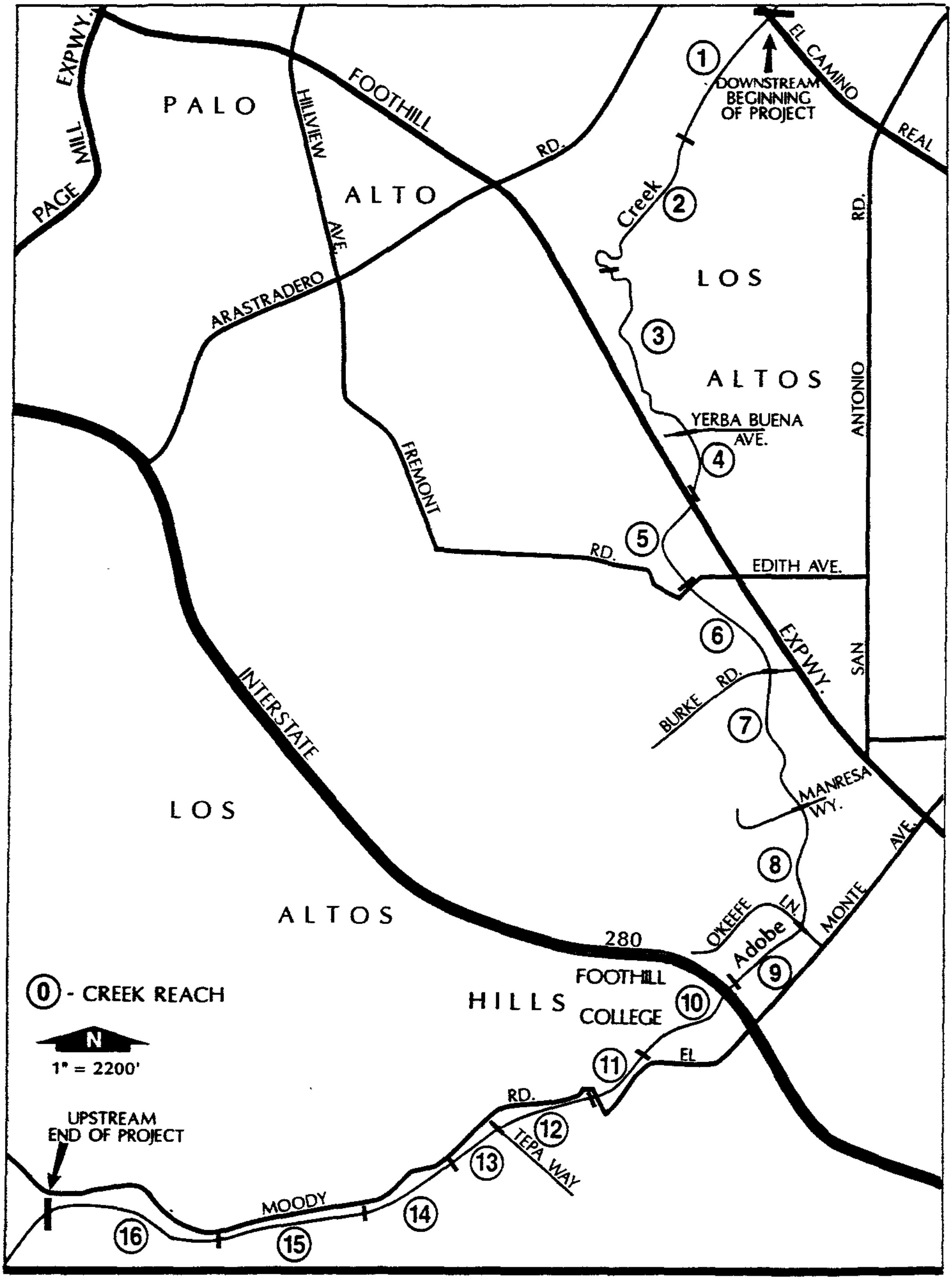
The project is located along the upper portion of Adobe Creek, from El Camino Real, upstream to The Trust for Hidden Villa property on Moody Road, a distance of approximately 7.5 miles, in Santa Clara County, California. The affected portion of Adobe Creek has been divided into 16 reaches to assist in the location of the proposed modifications, as shown in Figure 2.

C. PROJECT OBJECTIVES

The objectives of the project are: 1) to reduce existing flooding, erosion, and sedimentation problems, 2) adopt a future maintenance program, 3) provide adequate access for future maintenance activities, and 4) reduce future maintenance costs. The minimization of environmental impacts served as a basic design guideline in developing a project to meet the four project objectives. For additional discussion of the overall objectives of the District as an agency, please refer to **Section I., E., Consistency with Plans, Goals, and Policies**.

D. DETAILED DESCRIPTION OF THE PROPOSED PROJECT

The proposed project is a capital improvement project consisting of three elements: 1) limited channel modifications for flood control purposes; 2) creekbank erosion repairs; 3) develop new creek maintenance access and enhance existing access; and 4) adoption of a new maintenance program. The proposed channel modifications include enlarging the Adobe Creek channel at West Edith Avenue and Foothill College, and the replacement of four culverts. The proposed channel modifications also include two bridge/culvert replacements (at Yerba Buena Avenue and Tepa Way), which are not included in the scheduled construction at this time. The second element of the project proposes creekbank erosion repairs at 17 sites and rock weirs to stabilize the creekbed at eight sites in the project reach. The project also includes the modification of the entrance structure of the existing bypass channel upstream of Tepa Way. The proposed maintenance program involves the construction of five new or upgraded maintenance access ramps, as well as a program for the acquisition of a continuous maintenance corridor



VICINITY MAP AND PROJECT REACHES

FIGURE 2

and the implementation of a new maintenance program. Each of these elements is described below. Figure 3 shows the locations of the project elements along the creek. For a more detailed discussion of the proposed project by channel reach, refer to the Engineer's Report.

CHANNEL MODIFICATIONS AND CULVERT REPLACEMENTS

The channel modifications proposed by the project include the replacement of inadequate culverts, channel widening, and the placement of channel bank stabilization such as gabions, rock riprap, geocell, and sacked concrete slope protection (SCSP). The project proposes to replace four inadequate culverts on the upper portion of Adobe Creek at the following locations: El Camino Real, Foothill Expressway, Burke Road, and O'Keefe Lane. The proposed project also includes environmental review for the two bridge/culvert replacements: 1) Yerba Buena Avenue bridge, and 2) Tepa Way culvert. These measures are not included in the scheduled construction. The District would participate as a cost-shared partner, if the bridges are replaced by another party for traffic or structural reasons. For a detailed discussion of the specific construction procedures proposed at each location, refer to the Engineer's Report.

The channel modification and culvert replacement work proposed by the District, would be performed in Reaches 1, 4, 5, 7, 9, 11, and 13. The proposed work at each of these locations is described below.

Also noted below are locations where construction of new or modified maintenance ramps are proposed as part of the project.

El Camino Real to Upstream of Hetch Hetchy Pipeline (Reach 1):

The project proposes to replace the existing culvert under El Camino Real with a 20-foot wide by 12-foot high culvert that can accommodate a one percent flood event, and rebuild the upstream transition between the culvert and the creekbed. The existing upstream concrete transition would be replaced with gabions on the channel sides and rock riprap on the channel bottom (invert). The project would also extend the gabions upstream to stabilize the existing maintenance ramp on the left (east) bank[3].

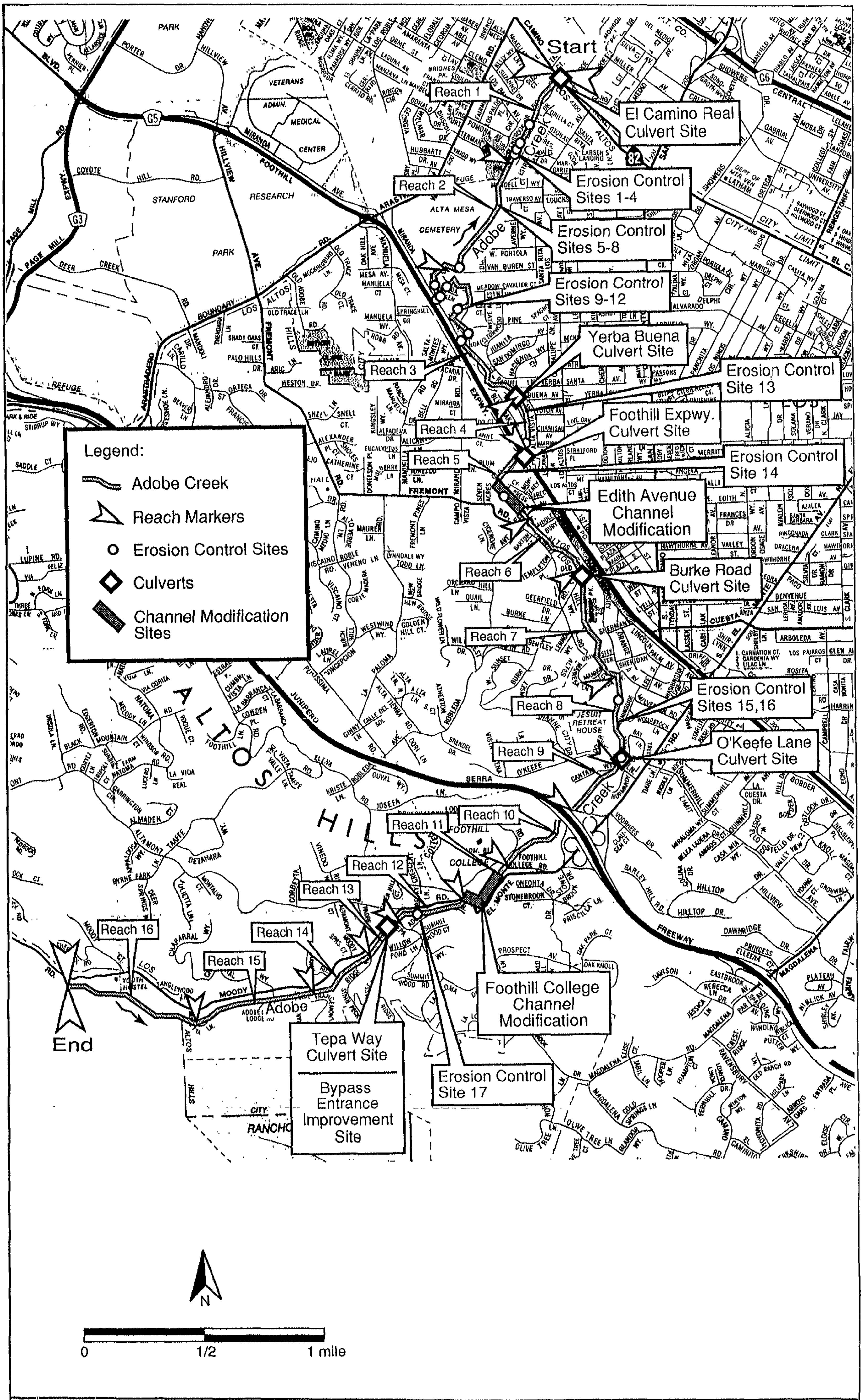
Prior to replacement of the culvert, existing service and utility lines that cross Adobe Creek would be relocated. A shoring system consisting of sheet piles or soldier piles with lagging would also be installed. Once the shoring system is installed, the channel would be excavated and the existing culvert removed. The new culvert would then be poured and formed. After the culvert has been completed and the form work removed, backfill would be placed behind the culvert walls and the roadway would be paved. Other methods of construction, such as the use of incentive contracts and penalties for delays, cast-in-place concrete, pre-cast concrete segments, or the use of a temporary bridge over the entire project site may be used to reduce traffic impacts and the time of construction.

Hetch Hetchy Pipeline to Upstream End of Alta Mesa Cemetery (Reach 2):

In this reach, the project proposes an upgrade to the existing, privately owned maintenance ramp on the right bank at creek Station 305+00.

---

[3] For the purposes of this report, references to right and left bank are oriented looking upstream.



PROJECT SITE MAP

FIGURE 3

Upstream Alta Mesa Cemetery to Yerba Buena Avenue (Reach 3):

The project proposes to upgrade the existing maintenance ramp from District property on the right bank downstream of Raquel Court.

Yerba Buena Avenue to Foothill Expressway (Reach 4):

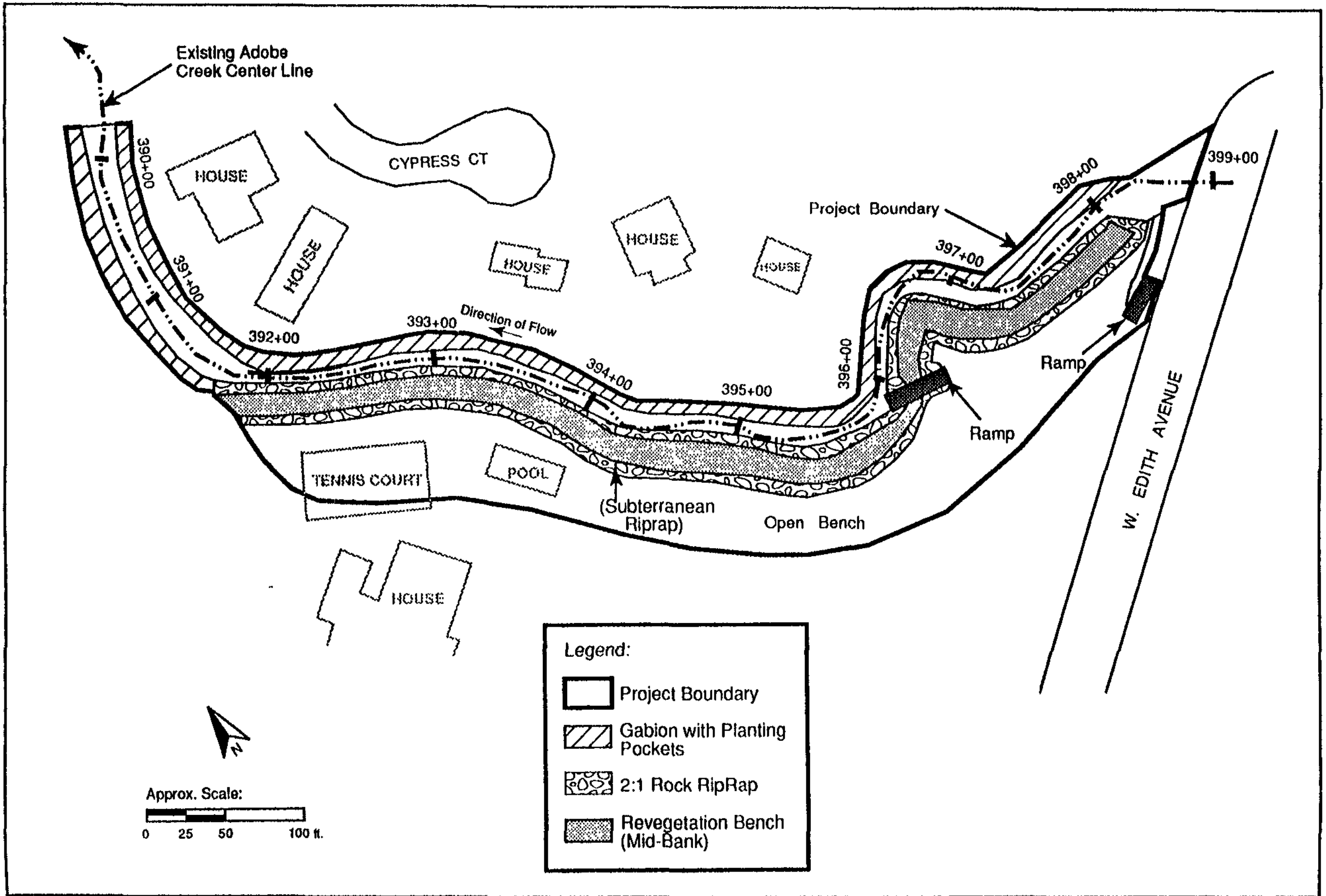
The project includes the replacement of the existing bridge at Yerba Buena Avenue with a double box culvert that is 12 foot by 8.5 foot on one side and 12 foot by 12 foot on the other, and the reconstruction of the upstream and downstream transitions between the culvert and the creek bed. Construction of the Yerba Buena Avenue culvert would generally conform to the procedures described above for the El Camino Real culvert replacement in Reach 1. This work is not currently scheduled for construction by the District.

Foothill Expressway to West Edith Avenue (Reach 5):

The project proposes to install an additional 12 foot by 12 foot box culvert directly to the right of the existing culvert, under Foothill Expressway. The existing culvert would remain. The project also proposes rebuilding the upstream and downstream transition structures.

In this reach, the proposed channel modifications are to widen the existing channel to a 90-foot wide three stage combination channel. The low-flow channel (which holds approximately 1.5 year flows) will have a bottom width of 10 feet, gabions to the top of the left bank only, rock riprap on the channel bottom (invert) and three feet up the right bank. Above the low-flow channel on the right bank would be a revegetated earthen 10-foot wide mid-bank bench. Riprap on the banks will be covered with a layer of soil and seeded. In addition, willow cuttings will be installed in the riprap. Three feet above the mid-bank bench would be a 48 to 64-foot wide high flow bench. The slope from the mid-bank bench to the high-flow bench would be earthen and also vegetated. The high-flow bench must be kept open to function, therefore, only ground cover plants and small shrubs will be allowed in the bench area. The total length of the three stage channel is 700 feet. A new maintenance ramp surfaced with articulated concrete block would be incorporated into the rock on the right bank near West Edith Avenue. For 200 feet downstream of the bench portion of the modifications, the channel modifications would consist of a widened channel with a bottom width of 20 feet and gabions on the side slopes. This channel would have rock riprap on the channel bottom and a 1.5-foot deep low-flow fish channel. Figure 4 presents a plan view of the proposed channel modifications at West Edith Avenue. Refer to the Engineer's Report or Figure 19 of this EIR for a cross-section view of the proposed channel modifications. A photo-simulation of the proposed modifications is presented as Figure 29 in **Section II., H., Visual And Aesthetics**, of this EIR.

Channel modifications in Reach 5 include the replacement of existing drop structures with "fish passable" structures immediately downstream of West Edith Avenue and at the downstream end of the channel modifications. "Fish passable" structures have been designed with a resting pond and drop configurations that anadromous salmonids can negotiate during flood flows to move upstream. Key elements of these "fish passable" structures are vertical rises of no more than two feet, and a resting pond below the drop of 1.5 times the vertical rise and at least six feet in length. These structures are described in detail in the Engineer's Report.



PLAN VIEW OF PROPOSED PROJECT AT WEST EDITH AVENUE

FIGURE 4

Burke Road to Manresa Way (Reach 7):

The project proposes to replace the bridge at Burke Road with a 20-foot wide bridge and to reconstruct the upstream and downstream transitions between the bridge and the creekbed. Construction of the Burke Road bridge would generally conform to the procedures described above for the El Camino Real culvert replacement in Reach 1.

O'Keefe Lane to Interstate 280 (Reach 9):

The project proposes to replace the culvert under O'Keefe Lane with a 15 foot by 11 foot box culvert, and reconstruct the upstream and downstream transitions between the culvert and the creekbed. The existing upstream concrete transition would be replaced with a transition that includes a drop inlet to the bridge. The downstream transition would be reconstructed at a lower grade to reduce the potential erosion, which occurs extensively under existing conditions. Construction of the O'Keefe Lane culvert would generally conform to the procedures described above for the El Camino Real culvert replacement in Reach 1. All new drops would be "fish passable".

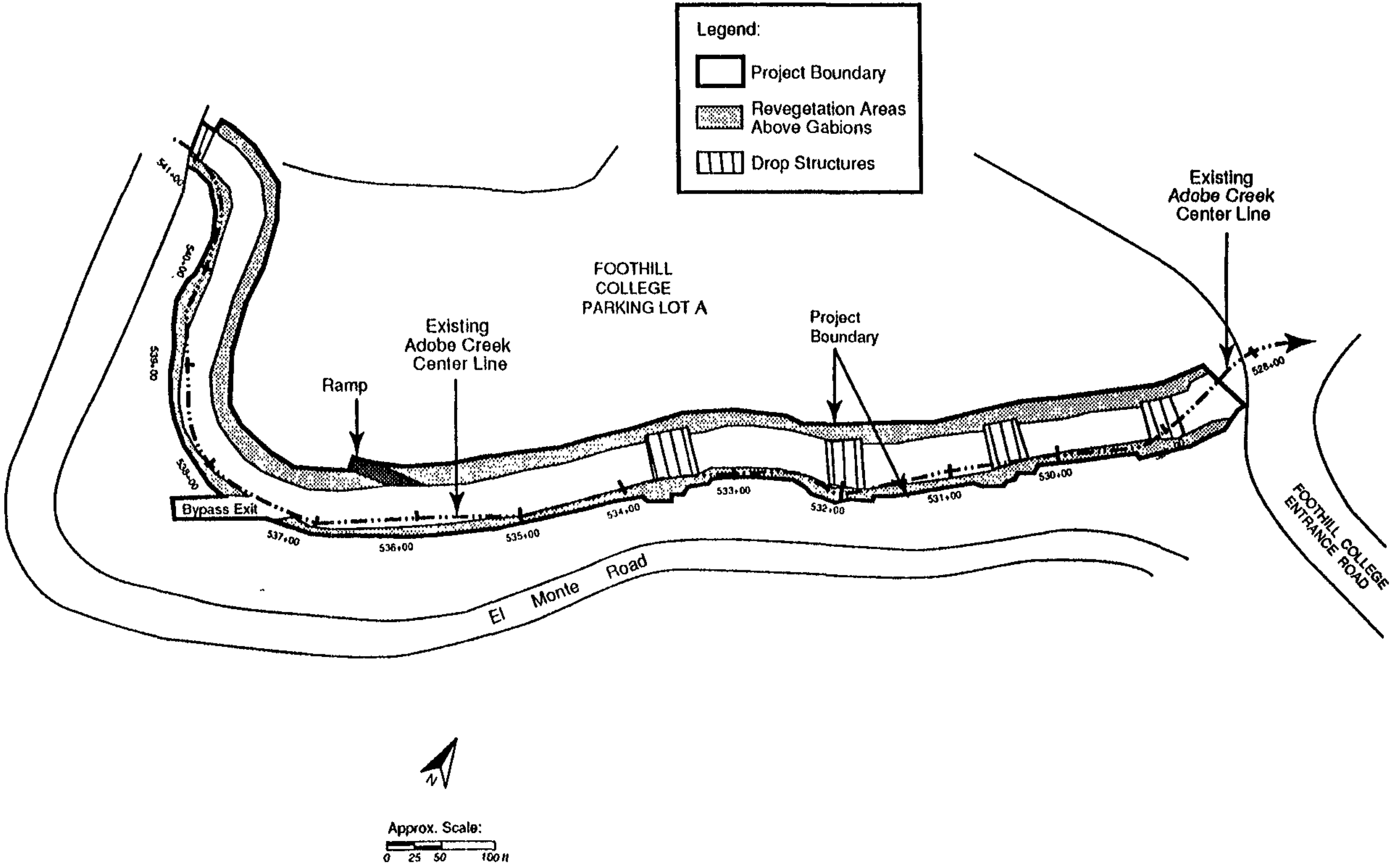
Foothill College Entrance Road to El Monte Road (Reach 11):

The proposed channel modifications in this reach consist of constructing a widened low-flow channel with gabions lining the banks and rock riprap on the channel bottom. The project includes vegetated high-flow benches above the gabions on both of the channel banks. The proposed limits of excavation extend partially up the left (east) bank and up the right (west) bank to the Foothill College parking lot. The proposed channel modifications would require the removal and relocation of 67 parking spaces from the adjacent Foothill College Parking Lot A to other areas on the college campus. Figure 5 presents a plan view of the proposed channel modifications at Foothill College. Refer to the Engineer's Report or Figure 23 of this EIR for a cross-section view of the proposed channel modifications. A photo-simulation of the proposed modifications is presented as Figure 30 in **Section II., H., Visual and Aesthetics**, of this EIR.

Channel modifications in Reach 11 include the replacement of existing drop structures with "fish passable" structures (see description of fish passable structures under previous Reach 5 discussion) at five locations along the modification reach. In this reach, the project also includes the construction of a new maintenance ramp on the right side of the channel opposite the exit of the bypass channel.

Tepa Way to Rhus Ridge Road (Reach 13):

The project includes the replacement of the existing culvert at Tepa Way with a 15 foot by eight foot box culvert, and the reconstruction of the upstream and downstream transitions between the culvert and the creekbed. Construction of the Tepa Way culvert would generally conform to the procedures described above for the El Camino Real culvert replacement in Reach 1. In this reach, the project also proposes to replace the existing entrance to the bypass channel with a new entrance structure and debris rack. As mentioned above, culvert replacement is not currently scheduled for construction by the District.



PLAN VIEW OF PROPOSED PROJECT AT FOOTHILL COLLEGE

FIGURE 5

EROSION REPAIR MODIFICATIONS

In addition to the channel modifications listed above, the proposed project includes 17 small bank erosion repair sites (refer to Figure 3 for locations), each less than 150 feet in length and an average length of 50 feet. A list of these sites is presented in Table 1. Erosion repair sites would be constructed in three stages: 1) site preparation, which would consist of the removal of vegetation and concrete rubble, as well as any necessary cuts and fills 2) placement of slope protection material; and 3) revegetation. Erosion repair work would be mainly performed with a hydraulic excavator, dump trucks, and loaders.

The erosion repair alternatives which are proposed can be divided into two categories: 1) mixed construction, which combines structural or mechanical methods with the incorporation of plant material such as planting willow cuttings in riprap; and 2) armoring construction, which uses inert materials such as sacked concrete slope protection and gunite.

Mixed construction methods, such as rock riprap, would mostly be used for erosion repair. Where riprap is used the voids would be filled with soil, seeded, and when necessary, held with a fiber mesh or similar method. Where rock riprap is not feasible, armoring construction methods, such as sacked concrete slope protection would be used.

In addition to bank erosion repairs, the project includes the installation of vortex rock weirs to stabilize the creekbed in eight areas where the channel bottom has been observed to be actively eroding. Vortex rock weirs would consist of ½-ton to one-ton rock keyed into the channel to eliminate erosion. In order to prevent further degradation, vortex rock weirs would be installed downstream of some channel bank erosion areas. Vortex rock weirs would be constructed with large boulders four to five feet in diameter, placed in an arch shape, with the closed end of the arch facing upstream. This forms a vortex that creates a downstream plunge pond for energy dissipation and aquatic habitat. Vortex rock weirs would be limited to approximately two feet in height above the existing creekbed. During the site preparation, vegetation would be removed and enough of the bank excavated to secure the rock placement. A loader truck would transport the rock material and a hydraulic excavator would place it into the channel. The bank slope would then be revegetated. For a detailed discussion of proposed erosion repair activities, refer to the Engineer's Report.

MAINTENANCE PROGRAM

The project also includes adoption of a General Maintenance Program for Adobe Creek, which would identify a continuous corridor for long-term maintenance of Adobe Creek in the project reach. The maintenance program proposes specific bank stabilization techniques for varying degrees and types of future erosion problems, control of woody vegetation, and removal of accumulated debris and sediment in the channel.

TABLE 1
EROSION REPAIR SITES

BANK EROSION CONTROL SITES

Site No.	Reach (Station)	Description	Proposed Modifications
1	1 (255+00)	12' vertical right bank, 50'wide, exposed earth for whole height, Cabaña Hotel and District property.	Lay back top of slope with rock at toe, 12' up bank, soil placed between rock riprap with joint planting.
2	1 (261+00)	9' left bank, 5' vertical at toe, exposed earth with roots at toe with ivy on bank, 30' wide from tree to tree with outfall at center, creek is degraded 6" to 8" below outfall, Slautterback residence.	Rock at toe, 4' up bank, 40' total repair length, protect trees and fix outfall, no cut into existing bank, soil placed between rock riprap with joint planting.
3	1 (261+60)	16' vertical right bank, 90' wide, roots exposed throughout bank height, outside of bend, trees at top of bank, Cabaña Hotel and District property.	Rock at toe, 6' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
4	1 (263+40)	16' vertical right bank, 40' wide, outside of bend, midbank is more incised than top and bottom, toe is exposed earth, bank is exposed roots, trees at top of bank, Wright residence.	Rock at toe, 6' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
5	2 (297+00)	30' left bank, 75' wide, 0.5:1 side slope, outside of bend, top of bank is vertical with exposed earth and fence at edge beginning to slide down, bank has some vegetation, Faillace residence.	Rock protection, 14' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
6	2 (304+00)	25' vertical right bank, 40' wide, exposed earth with roots, outside of bend, structure near top of bank, Alta Mesa Cemetery.	Sacked concrete slope protection, 12' up bank.

TABLE 1
EROSION REPAIR SITES
(Continued)

Site No.	Reach (Station)	Description	Proposed Modifications
7	2 (307+40)	22' vertical right bank, 75' wide, outside of bend, exposed earth for whole height, toe is more incised than top, Alta Mesa Cemetery.	Rock protection, 11' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
8	2 (311+30)	35' vertical right bank, 70' wide, exposed earth with overhanging roots at top, bank could fail if saturated, Alta Mesa Cemetery.	Rock protection, 12' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
9	3 (316+00)	12' left bank, 6' to 7' vertical left bank, 25' wide, outside of bend, exposed earth with roots at toe and some rubble randomly placed, Cover residence.	Gabion slope protection, varies up to 7.5' up bank, joint planting.
10	3 (323+00)	20' vertical left bank, 25' wide, roots exposed and overhanging bank, fence at top edge may be threatened, downstream end is the worst, District easement.	Rock at toe, 6' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
11	3 (331+00)	20' vertical left bank, 40' wide, exposed earth, trees close to top edge, outside of bend, McDonald residence.	Rock at toe, 6' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
12	3 (333+40)	25' vertical left bank, 85' wide, exposed earth, trees close to top edge, outside of bend, Bruno residence.	Rock at toe, 8' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
13	4 (372+00)	10' vertical left bank, 50' wide, outside of bend, exposed earth with roots at top, District easement at Harway and Greer residences.	Geocell, 10' up bank, no cut into existing bank.

TABLE 1
EROSION REPAIR SITES
(Continued)

Site No.	Reach (Station)	Description	Proposed Modifications
14	5 (388+70)	12' vertical left bank, 50' wide, outside edge of bend, incised exposed earth below hanging vegetation, downstream of SCSP on right bank which is being undercut and failing one sack at a time at downstream end, Van Horne residence.	Sacked concrete slope protection, 12' up bank.
15	8 (464+00)	6' vertical left bank, 30' wide, exposed earth with roots, outside of bend, at a knuckle which could form a new channel path, fence at top edge, Doyle residence.	Rock at toe, 6' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
16	8 (484+40)	30' vertical right bank, 20' wide, outside of bend, middle is more incised than top and toe, bank is very damp throughout it's height, tree at top edge with roots overhanging bank, District easement at Jesuit Retreat House.	Rock at toe, 6' up bank, no cut into existing bank, soil placed between rock riprap with joint planting.
17	12 (553+80)	10' vertical banks, 60' wide, upstream of old creek alignment, soil is soft and highly erosive, right bank at upstream end is eroded 6' from where bank used to be, fence post hanging in the channel, District easement.	Geocell, 10' up both banks.

TABLE 1
EROSION REPAIR SITES
(Continued)

CHANNEL BOTTOM STABILIZATION SITES

Site No.	Reach (Station)	Description	Proposed Modifications
1	1 (260+80)	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
2	3 (315+00)	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
3	3 (319+00)	Channel bottom stabilizer destroyed.	Reconstruct stabilizer.
4	3 (322+90)	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
5	3 (334+60)	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
6	4 (366+00)	Undercutting is occurring underneath and below at downstream side of stabilizer, 1.5' to 2' deep plunge pool, District easement.	Stabilize with rock or rebuild stabilizer.
7	12 (553+50)	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.
8	12 (555+00)	Channel bottom degrading.	Vortex rock weir to be added to limit channel bottom erosion.

Vegetation and sediment in the channel would be removed if it is determined by the District to impede the conveyance of flood flows. Vegetation would be removed by hand-labor, mechanical means, and/or herbicides only where the District has right-of-way access[4]. Obstructions to flows, such as fallen trees and debris would also be removed by the District on an as needed basis. Vegetation removal impacts associated with these maintenance activities are discussed in **Section II., D., Vegetation and Wildlife,** of this EIR, under *Effects Found To Be Less-Than-Significant.*

Maintenance activities would also include repairing erosion protection and conveyance structures, such as bridges, culverts, rock lining, gabion baskets, articulated concrete block, and rock weirs, as necessary. Areas along the channel which are actively eroding would be subject to either preventive slope protection or remedial slope protection. Preventive slope protection consists of protecting the channel bank to stabilize the zone of greatest erosion potential and protecting the channel bottom. Remedial slope protection includes the three categories of erosion repair described above. For a detailed discussion of the proposed maintenance activities, refer to the Engineer's Report. It is estimated that the repair of future erosion sites would be required at approximately six new sites every five years, based on past experience. Biotic impacts associated with these sites are discussed in **Section II., D., Vegetation and Wildlife**, of this EIR, under *Effects Found To Be Significant.*

The proposed maintenance activities would begin after project construction and would be performed only in areas where the District has existing fee title or appropriate easement rights-of-way. If maintenance activities are necessary in areas where the District does not have right-of-way access, the District would prepare a Limited Maintenance Easement Deed and request the owner to voluntarily dedicate a limited easement giving the District legal access to conduct maintenance activities. For a detailed discussion, refer to the Engineer's Report.

As mentioned previously under **Channel Modifications and Culvert Replacements**, the project also incorporates the construction of new maintenance ramps at West Edith Avenue and Foothill College, and modification to existing ramps at El Camino Real, Alta Mesa Cemetery, and on the District property off of Foothill Expressway.

The District is currently preparing two maintenance program EIRs to consider the long-term environmental impacts of its District-wide sediment removal and erosion control, and vegetation management programs. The maintenance activities described for Adobe Creek are anticipated to follow a protocol similar to the proposal being developed with the regulatory agencies for the District-wide maintenance programs. The District-wide maintenance program EIRs are intended to provide a framework for District staff to carry out standard maintenance best management practices (BMPs), impact assessments, compensatory mitigation, and annual reporting.

Best Management Practices Protocol

Each maintenance project will follow a management protocol similar to that illustrated by the Best management Practices Maintenance Protocol Flow Chart (see Appendix A). The flow chart shows that the BMP process covers all three phases of maintenance work: (1) maintenance design; (2) project construction; and (3) monitoring. Under the BMP protocol, the District will evaluate each maintenance project to determine the least environmentally damaging, economically practicable maintenance design.

---

[4] Herbicides would be only those approved for use in aquatic areas by the California Department of Pesticide Regulations (formerly Cal EPA) and applied by a State licensed vegetation technician.

Impact Assessment

Most District maintenance projects will not have any significant environmental impacts due to the nature of the projects, low environmental sensitivity of the sites, or through the implementation of standard environmental controls. The District will proceed with progressive maintenance measures to first avoid significant impacts to sensitive resources.

Compensatory Mitigation

If the application of BMPs is not sufficient to fully mitigate impacts, compensatory mitigation will be implemented. When on-site, in-kind mitigation is not possible due to site constraints, an option is to mitigate at an off-site location. The sites intended for use as mitigation sites for Adobe Creek are described and shown in **Section II., D., Vegetation and Wildlife**, of this EIR.

Annual Reporting

Annual maintenance reporting for Adobe Creek would be included with District-wide annual reporting.

Consistency with Future Permits

Upon certification of the District Maintenance Program EIRs and approval by the resource agencies of an individual U.S. Army Corps of Engineers (Corps) permit, the District will be able to continue its work under a largely self-regulating program. At that time, the maintenance portion of the Adobe Creek Corps permit is proposed to become part of the District-wide individual Corps maintenance permit.

CONSTRUCTION PHASING

The proposed project is scheduled to be constructed in three phases. Phase I would include work from El Camino Real to upstream of Foothill Expressway, and is expected to take approximately two years to complete. Phase II consists of work from upstream of Foothill Expressway to Interstate 280, and is anticipated to take approximately one year to complete. Phase III includes work from Interstate 280 to the upstream end of the project, and is expected to take approximately one year to complete.

E. CONSISTENCY WITH PLANS, GOALS, AND POLICIES

In conformance with Section 15063(d)(5) of the CEQA Guidelines, the following section discusses the consistency of the proposed project with relevant plans and policies.

1. FEDERAL POLICIES

CLEAN WATER ACT

Section 404(b) of the Federal Clean Water Act (1972) addresses the preservation of water quality and requires the Corps to evaluate the impacts of discharging dredged or fill material into "Waters of the United States". Development in areas identified as jurisdictional waters is subject to the permit requirements of the Corps, under Section 404 and RWQCB Section 401 of the Clean Water Act. These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), as well as all impoundments of waters, tributaries of waters, and the territorial seas otherwise defined as "Waters of the U.S.", and wetlands adjacent to "Waters of the U.S." (33CFR, Part 328, Section 328.3).

Consistency: Implementation of the proposed project would be subject to the issuance of a Corps permit. The Corps Section 404 permit would, in turn, require the issuance of a Section 401 water quality certification by the California Water Resources Control Board. The project would be required to conform to the requirements of the Corps permit, and therefore, would conform with Section 404 (b) of the Clean Water Act.

ENDANGERED SPECIES ACT - SECTION 7

The Endangered Species Act (ESA) requires Federal agencies to consult with the United States Fish and Wildlife Service (USFWS) to avoid impacting endangered or threatened species. The ESA regulates activities that may constitute a "taking" of individuals as well as actively or potentially used habitat. The USFWS would advise and assist the Corps in evaluating the potential impacts of the proposed project, because the project would require a Corps Section 404 permit.

Consistency: Mitigation measures have been included in the project to minimize potential impacts to special status species (refer to **Section II., D., Vegetation and Wildlife**, of this EIR). Therefore, the project would conform with the Federal Endangered Species Act.

FISH AND WILDLIFE COORDINATION ACT

The Fish and Wildlife Coordination Act states that whenever the waters of any stream or other body of water are proposed or authorized to be controlled or modified by any public or private agency under Federal permit, the permit issuing agency shall first consult with the USFWS. The Fish and Wildlife Coordination Act then requires that the recommendations of the Secretary of the Interior and the California Department of Fish and Game (CDFG) be considered.

Consistency: The proposed project requires a permit from the Corps, which would be prepared in consultation with the USFWS. The project would conform to the requirements of the Corps permit, which may incorporate input from the USFWS and CDFG. Therefore, the project would conform with the Fish and Wildlife Coordination Act.

EXECUTIVE ORDER 11990

The purpose of Executive Order 11990 is to avoid impacts to wetlands, as well as to avoid direct or indirect support of new construction in wetlands, whenever practicable alternatives are available. Executive Order 11990 states that new construction activities must evaluate practicable alternatives, identify practicable measures to minimize harm to wetlands, and provide the public an opportunity for early review of proposed activities.

Consistency: This EIR, which will be subject to public review, includes an evaluation of alternatives to the proposed project and measures to mitigate potentially significant impacts to wetlands. Please refer to **Sections II., D., Vegetation and Wildlife**, and **III., Alternatives to the Proposed Project**, of this EIR for discussions of wetland impacts and mitigation measures, and alternatives to the project. The project will also be implemented subject to the approval of a Corps Section 404 permit. For these reasons, the project would be consistent with Executive Order 11990.

2. STATE POLICIES

CALIFORNIA ENDANGERED SPECIES ACT

The California Endangered Species Act (CESA) states that it is the policy of the State to conserve, protect, restore, and enhance any endangered or threatened species and its habitat. It is also the intent of the CESA to acquire lands to provide habitat for these species. Further, State agencies should not approve projects which would jeopardize the continued existence of any rare, endangered or threatened species, or result in impacts to the essential habitat of these species, if feasible alternatives are available. CESA also states that if specific conditions exist which make these alternatives infeasible, projects may be approved provided appropriate mitigation and enhancement measures are included.

Consistency: Mitigation measures have been included in the project to reduce any potential impacts to rare, endangered, or threatened species (refer to **Section II., D., Vegetation and Wildlife**, of this EIR). Therefore, the project would conform with the California Endangered Species Act.

CALIFORNIA DEPARTMENT OF FISH AND GAME CODES

Fish and Game Code 5650 states that it is unlawful to deposit or permit passage of any substance or material deleterious to fish, plant life, or bird life into State waters.

Consistency: The proposed creek channel modifications have been designed to minimize harm to fish, plant life and bird life. Additionally, mitigation measures are proposed by the project to offset potentially significant impacts to less-than-significant levels. For these reasons, the project would conform with Fish and Game Code 5650 (refer to **Section I., D., Detailed Description of the Proposed Project**, of this EIR).

Fish and Game Code 6902 states that it is the policy of the State to significantly increase the natural production of salmon and steelhead trout by the end of this century. Under Code 6902, the CDFG shall develop a plan and a program that strives to double the current natural production of salmon and steelhead trout resources.

Consistency: The project has been designed to minimize impacts to salmonids (refer to **Section I., D., Detailed Description of the Proposed Project**, of this EIR). Based upon an evaluation of the proposed project by H.T. Harvey and Associates, the project would not result in a significant impact upon salmonids (refer to **Section II., D., Vegetation and Wildlife**, of this EIR). For these reasons, the project would be consistent with Fish and Game Code 6902.

3. REGIONAL AND LOCAL PLANS AND POLICIES

BAY AREA 1994 CLEAN AIR PLAN

The Clean Air Plan establishes regional policies and guidelines to meet the requirements of the Clean Air Act, as amended through 1990.

Consistency: Since the project would not consist of any new development or expansion of existing development, the proposed Adobe Creek Watershed project would not significantly increase pollutant emissions, vehicular traffic, or other adverse air quality impacts. Therefore, the project would be consistent with the Clean Air Plan.

REGIONAL WATER QUALITY CONTROL BOARD BASIN PLAN UPDATE (1995)

The State policy for water quality control is to maintain a level of water quality sufficient for water resources that provides the maximum benefit to the people of the State. Beneficial uses described in the Regional Water Quality Control Board (RWQCB) Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) serve as a basis for establishing water quality standards and discharge prohibitions to attain this goal. The beneficial uses that are most relevant to the proposed project are described below:

Wildlife Habitat - provide a water supply and vegetation habitat with sufficient water quality for the maintenance of wildlife.

Consistency: The proposed creek channel modifications have been developed to minimize sedimentation and erosion in the stream channels (refer to **Section I., D., Detailed Description of the Proposed Project**, of this EIR). Additionally, the project, once the proposed mitigation is implemented, is not expected to result in a significant adverse loss of riparian vegetation habitat (refer to **Section II., D., Vegetation and Wildlife**, of this EIR). Therefore, the project would be consistent with this beneficial use.

Preservation of Special Status Species - provide an aquatic habitat necessary, at least in part, for the survival of certain species established as rare and endangered.

Consistency: The proposed creek channel modifications have been developed to minimize sedimentation and erosion into the stream channels (refer to **Section I., D., Detailed Description of the Proposed Project**) of this EIR). Additionally, the project includes mitigation measures to reduce any potential impacts to special status species (refer to **Section II., D., Vegetation and Wildlife**, of this EIR). Therefore, the project would be consistent with this beneficial use.

Fish Migration - provide a migration route and temporary aquatic environment for anadromous or other fish species.

Consistency: The project includes mitigation measures to ensure the passability of migration routes for anadromous and other fish species. Therefore, the project would be consistent with this beneficial use.

Fish Spawning - provide a high quality aquatic habitat especially suitable for fish spawning.

Consistency: The proposed project has been developed to minimize sedimentation and reduce impacts to aquatic habitat suitable for fish spawning and to avoid reductions in channel shading and resultant increased stream temperatures (refer to **Section I., D., Detailed Description of Proposed Project, Section II., D., 1., Riverine, Section II., D., 1., Summary Site Descriptions - Special Status Species, Section II., D., 2., Effects Found To Be Less-Than Significant - Loss or Reduction in Quality of Fisheries Habitat**, and **Section II., E., Water Quality**, of this EIR). The proposed project would not result in significant temperature increases due to the loss of creek shading (refer to **Section II., D., Vegetation and Wildlife**, of this EIR). Therefore, the project would be consistent with this beneficial use.

Cold Fresh Water Habitat - provide a cold water habitat to sustain aquatic resources associated with a cold water environment.

Consistency: The proposed project would not affect aquatic resources associated with a cold water environment since the proposed project already includes replacement of channel shading (which contributes to moderation of stream temperatures) that would be lost during construction (refer to **Section II., D., 1., Riverine**, and **Section II., D., 1., Summary Site Descriptions - Special Status Species**, and **Section II., D., 2., Effects Found To Be Less-Than Significant - Loss or Reduction in Quality of Fisheries Habitat**, of this EIR). Therefore, the project would be consistent with this beneficial use.

SANTA CLARA VALLEY URBAN RUNOFF POLLUTION PREVENTION PROGRAM

The Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) was developed in accordance with the requirements of the 1986 San Francisco Bay Basin Water Quality Control Plan to control non-point sources of pollution from entering water sources and deteriorating water quality. This Program was also designed to fulfill the requirements of the Federal Clean Water Act and the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) permit requirements for storm water runoff. The Program's Municipal NPDES storm water permit was reissued by the Regional Board on August 23, 1995. The Municipal NPDES permit includes provisions requiring regulation of storm water discharges associated with new development and construction and development of an area-wide watershed management strategy. The permit also identifies recommended actions for the presentation, restoration, and enhancement of the San Francisco Bay Delta Estuary.

Consistency: One of the objectives of the project is to reduce erosion and sedimentation. The District would implement erosion control and storm water management practices during project construction, in accordance with the SCVUPPP and NPDES permit requirements. For a complete listing of the best management practices (BMPs) to be included in the project, refer to the Engineer's Report. The proposed project would not result in an impact upon the conservation and restoration of streams and riparian zones or areas of special or unique ecological significance. For these reasons, the proposed project would be consistent with the SCVURPPP and NPDES permit process.

SANTA CLARA VALLEY WATER DISTRICT

The mission of the District is to conduct a sound water management program that serves the community. It is the goal of the District to provide a supply of water, adequate in both quantity and quality to serve the community, to provide protection against flooding, and to coordinate all other community water related programs to achieve full water management. It is also the goal of the District to protect the environment and economic well-being of the community in the formulation of, and execution of, District programs and projects.

Consistency: The proposed project, by providing increased protection against flooding and protecting the economic interests of the community, would be consistent with the mission of the District. Additionally, the alternative selection process and procedures for project construction have been designed to minimize environmental impacts. For these reasons, the project would be consistent with the goals of the Santa Clara Valley Water District.

CITY OF LOS ALTOS GENERAL PLAN

The following Los Altos General Plan Elements are relevant to the project:

Land Use Element

The City of Los Altos Land Use Element is designed to promote balance and compatibility between adjacent land uses.

Consistency: The proposed Adobe Creek channel modifications would not change any land use designations, either on-site or in the surrounding area, and would not conflict with adjacent land uses. Therefore the project would conform to the policies, goals and objectives of the Land Use Element of the Los Altos General Plan.

Open Space, Conservation, and Community Facilities Element

The Open Space, Conservation, and Community Facilities Element promotes a regional stream management program and seeks to retain creeks and creekside areas in their natural state, while ensuring public safety.

Consistency: The project is intended to be a stream management project and includes measures to preserve the natural state of Adobe Creek in areas where it is feasible, while providing flood and erosion protection to ensure public safety. The proposed project also includes the adoption of a maintenance program for Adobe Creek. Therefore, the project would be consistent with this element of the City of Los Altos General Plan.

Natural Environment and Hazard Element

The Natural Environment and Hazard Element is designed to manage and protect natural resources while minimizing hazards to the community. Relevant goals and policies of the Natural Environment and Hazard Element seek to regulate land uses in flood-prone areas, find sources of funding to be used toward the prevention of flooding, and discourage concrete lining of creek channels. The Natural Environment and Hazard Element also encourages the District to use environmentally sensitive solutions to control local erosion problems.

Consistency: The main objective of the proposed project is to improve flood control and prevent damage due to flooding in the immediate area of Adobe Creek. The project includes the use of environmentally sensitive programs wherever feasible in order to control erosion and flooding hazards. For a detailed discussion of the proposed programs refer to **Section I., D., Detailed Description of the Proposed Project**, of this EIR. Therefore, the project would be consistent with this element.

CITY OF PALO ALTO COMPREHENSIVE PLAN

The following Palo Alto Comprehensive Plan Elements are relevant to the project:

Land Use Element

The Palo Alto Land Use Element provides guidance for the development and preservation of public and private properties within the Palo Alto planning area.

Consistency: The proposed Adobe Creek channel modifications would not change any land use designations, either on-site or in the surrounding area, and would therefore conform to the policies, goals and objectives of the Land Use Element of the Palo Alto Comprehensive Plan.

Natural Environment/Open Space Element

The City of Palo Alto Natural Environment Element is designed to manage and protect natural resources, in balance with economic and community development. Relevant goals and policies of the Natural Environment Element seek to minimize the impact of flooding and erosion.

Consistency: The project would be consistent with the goals and policies of the Natural Environment Element, since the project would not result in an impact upon the conservation and restoration of streams and riparian zones or areas of special or unique ecological significance. The proposed project would reduce flooding hazards and repair erosion problems. The project includes measures to minimize impacts on plants, animals, and water quality to a less-than-significant level. For these reasons, the proposed project would be consistent with the policies, goals and objectives of the Natural Environment Element.

TOWN OF LOS ALTOS HILLS GENERAL PLAN

The following Los Altos Hills General Plan Elements are relevant to the project:

Land Use Element

The Town of Los Altos Hills Land Use Element states that "uses of land should maintain the rural atmosphere, minimize disturbance to natural terrain, minimize removal of the natural vegetation, and create the maximum compatibility of development with the natural environment through site design, architecture, and landscaping."

Consistency: The project is designed to provide flood control and erosion repair while maintaining the natural state of Adobe Creek. The proposed Adobe Creek channel modifications would not change any land use designations, either on-site or in the surrounding area, and would not conflict with adjacent land uses. Therefore, the project would conform to the policies, goals and objectives of the Land Use Element of the Town of Los Altos Hills General Plan.

Open Space Element

The Open Space Element is designed to preserve the open space and natural qualities of the Los Altos Hills area. This element calls for the protection and maintenance of areas necessary to the integrity of natural resources and processes including creeks and riparian habitat.

Consistency: The project includes measures to minimize impacts to the creek channel and to mitigate potential impacts to riparian habitat to a less-than-significant level (refer to **Section II., D., Vegetation and Wildlife**, of this EIR). Therefore, the project would be consistent with this policy.

ADOBE CREEK RESTORATION PLAN

The Adobe Creek Restoration Plan was prepared in 1989 as a comprehensive stream restoration plan for Adobe Creek, from El Camino Real to the headwaters of the creek. The District, the City of Los Altos, the Town of Los Altos Hills, The Trust for Hidden Villa, and concerned citizens living near Adobe Creek assisted in the preparation of the Adobe Creek Restoration Plan. The plan is currently being implemented by the City of Los Altos, the Town of Los Altos Hills, and The Trust for Hidden Villa as a guide for land use decisions, creek maintenance, and for public education purposes.

The goals of the Adobe Creek Restoration Plan include the following: 1) maintaining and/or enhancing wildlife habitat and recreational opportunities; 2) providing erosion repair methods which sustain habitat quality; and 3) educating the public on the values of Adobe Creek. The plan recommended several methods to achieve these goals, including the promotion of desirable species, preservation of vegetation along the creek channel to prevent erosion, and the development of a public trail system.

Consistency: The District assisted in the preparation of and supports the Adobe Creek Restoration Plan. The proposed project includes measures to help restore the natural qualities of the creek. The project includes erosion repair methods which will sustain habitat quality. The project also proposes to preserve vegetation along the creek channel where feasible and would mitigate any loss of vegetation due to the project. Mitigation planting would be done with native species, which would enhance wildlife habitat. Therefore, the project would be consistent with this plan.

F. USES OF THE EIR

This Environmental Impact Report (EIR) is intended to provide the District Board of Directors, other public agencies, and the general public with the relevant environmental information to use in considering the proposed project. This EIR will also provide the environmental review for the renewal of the Corps Section 404 permit for maintenance activities on Adobe Creek. Upon certification of the District Maintenance Program EIR's and approval by the resource agencies of an individual Corps permit, the District will be able to continue its work under a largely self-regulating program. At that time, the maintenance protion of the Adobe Creek Corps permit is proposed to become part of the District-wide individual Corps maintenance permit.

This EIR is an informational document which will inform public agency decision makers and the public of the significant environmental effects of the project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. This EIR addresses the proposed channel modifications along Adobe Creek in Santa Clara County. The EIR identifies potential environmental impacts and appropriate mitigation measures to minimize the potential environmental effects of the project.

SECTION II

ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

A. LAND USE

1. EXISTING SETTING

OVERVIEW OF THE PROJECT AREA

Adobe Creek is located in the northwest portion of Santa Clara County, originating in the northeasterly slopes of the Santa Cruz Mountains. The creek flows for 14.7 miles in a northerly direction through the Cities of Mountain View, Palo Alto, Los Altos, and the Town of Los Altos Hills (refer to Figure 2). Adobe Creek ultimately drains into the Palo Alto Food Basin, located just northeast of Highway 101 in Palo Alto. No reservoirs exist on Adobe Creek and its only major tributary is Purissima Creek (refer to page one, **Section I** of this EIR for a discussion of the flooding history of Adobe Creek).

There have been many places where changes have been made in the creek channel alignment. In all of the cases below, the creek was moved from a meandering alignment across a historic floodplain to a straightened channel at the edge of a development. In the late 1950's, during the development of the Pink Horse Ranch Subdivision near Tepa Way in Los Altos Hills, the creek was moved to an alignment adjacent to Moody Road. When Foothill College was constructed in the early 1960's, the creek was moved from the base of the hill on the south side of the campus approximately 300 feet over to the bottom of the bank below El Monte Road. In the mid 1960's, before the development of the Middlebury Manor Subdivision (upstream of West Edith Avenue in Los Altos), the creek was moved over approximately 60 feet. There are also numerous other places in the study reach where the creek has been moved in the past. In all of the locations where the creek has been moved from a meandering alignment to a straightened channel, many problems such as erosion have been caused.

EXISTING LAND USE AND CREEK CHANNEL CHARACTERIZATION

The project portion of Adobe Creek extends from El Camino Real to upstream of Moody Road, on The Trust for Hidden Villa property, approximately 4,400 feet upstream of Murietta Lane (refer to Figure 3). The total length of creek involved in the proposed project is approximately 7.5 miles. The majority of the land uses surrounding the subject portion of the creek are residential. Much of Adobe Creek upstream of El Camino Real is privately owned, with property lines extending to the center of the creek. The District currently has rights-of-way on 110 of the 254 properties that border the creek.

A brief characterization of the creek channel and the land uses along the project portion of the creek on a reach-by-reach basis is provided in the following text:

Reach 1: El Camino Real to Hetch Hetchy Pipeline

Reach 1 extends from El Camino Real to the crossing of the Hetch Hetchy Pipeline, for a length of about 2,900 feet, as shown on Figure 6. Reach 1 passes through portions of the Cities of Palo Alto (along the right bank); and Los Altos (along the left bank).

The existing culvert at El Camino Real is currently inadequate to contain the 100-year flood flow. The creek channel along Reach 1 is primarily natural, with the exception of the existing culvert at El Camino Real and a concrete-lined channel located just upstream. Land uses along this reach are primarily medium density residential development. Other land uses along the creek include Terman Park and Jewish Community Center, located just downstream of the Hetch Hetchy Pipeline, and the Cabaña Hotel, located along the right bank of the creek at El Camino Real. Various commercial uses line El Camino Real in the project area.

Reach 2: Hetch Hetchy Pipeline to Upstream Alta Mesa Cemetery

Reach 2 extends from the Hetch Hetchy Pipeline crossings to the upstream limit of Alta Mesa Cemetery, for a length of about 3,500 feet, as shown on Figure 6. This reach passes through Palo Alto (along the right bank), and Los Altos (along the left bank).

Adobe Creek is well-defined, with steep, high, well-vegetated banks along Reach 2. The left bank of the reach is occupied by medium density residential uses. Alta Mesa Cemetery extends along the entire right bank of the reach.

Reach 3: Upstream Alta Mesa Cemetery to Yerba Buena Avenue

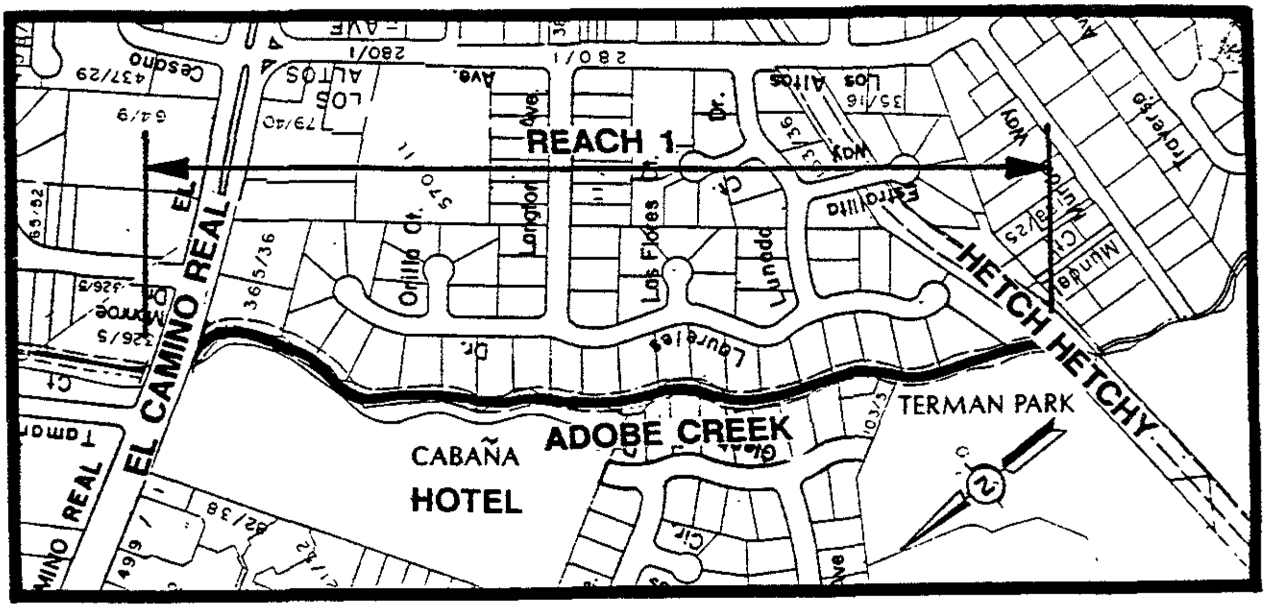
Reach 3 extends from the Alta Mesa Cemetery to downstream of Yerba Buena Avenue, for a distance of approximately 5,300 feet, as shown on Figure 7. This entire reach is located within the City of Los Altos, with the exception of Blue Oak Lane which is unincorporated Santa Clara County.

A large portion of the creek along Reach 3 is highly eroded and supported by sacked concrete slope protection or gunite. The land uses along this reach consist of medium density residential development. Some homes are constructed at the top of the creek bank and others encroach upon the creek area.

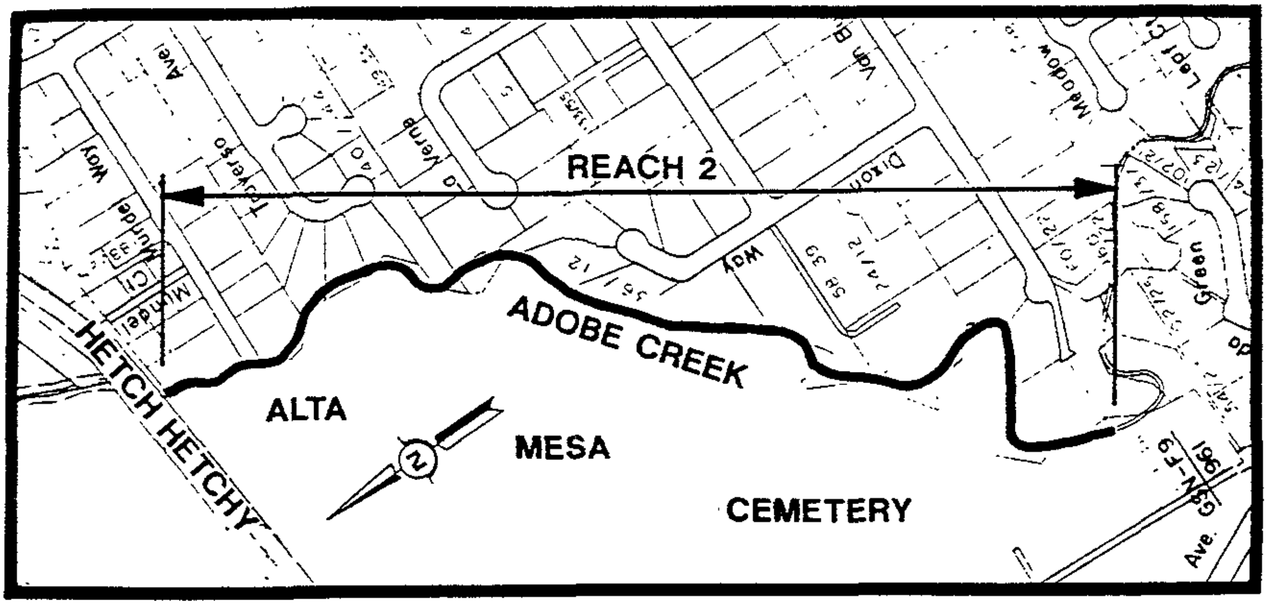
Reach 4: Yerba Buena Avenue to Foothill Expressway

Reach 4 is a relatively short reach of the creek, extending from downstream of Yerba Buena Avenue to downstream of Foothill Expressway, for a length of about 1,200 feet, as shown on Figure 7. This entire reach is located within the City of Los Altos, with the exception of Blue Oak Lane which is unincorporated Santa Clara County.

The creek banks along Reach 4 consist primarily of sacked concrete slope protection. Unprotected areas are subject to erosion. The land uses surrounding the creek along this reach consist of medium density residential uses which severely encroach upon the creek.



REACH 1 : EL CAMINO REAL TO HETCH HETCHY PIPELINE

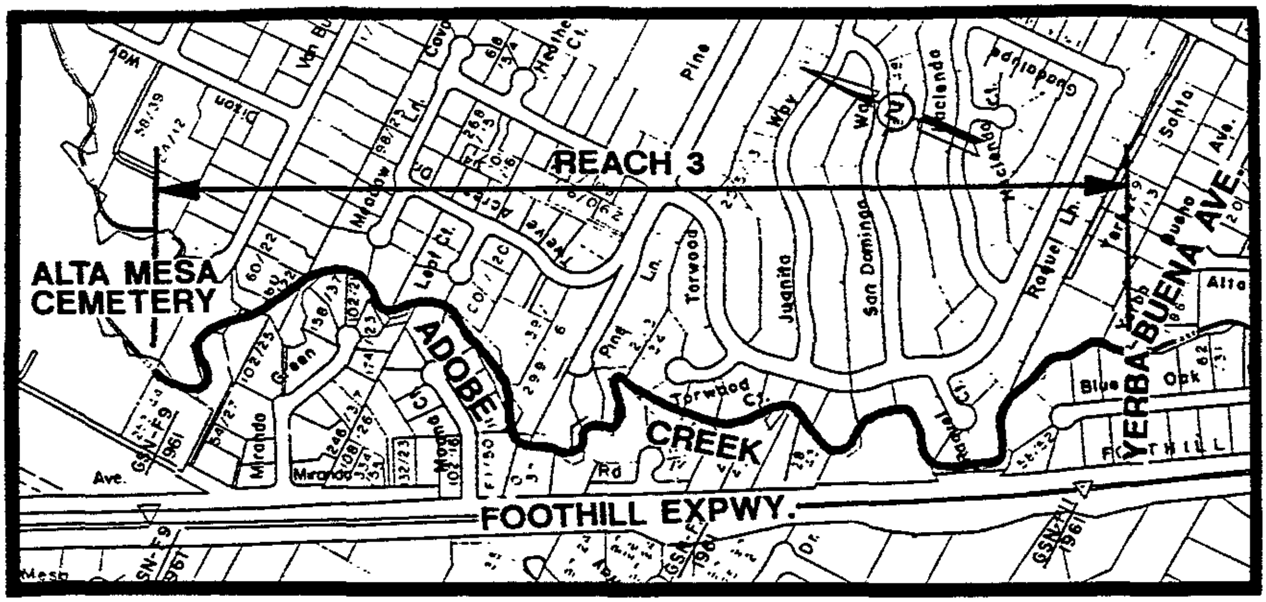


REACH 2: HETCH HETCHY PIPELINE TO UPSTREAM OF ALTA MESA CEMETERY

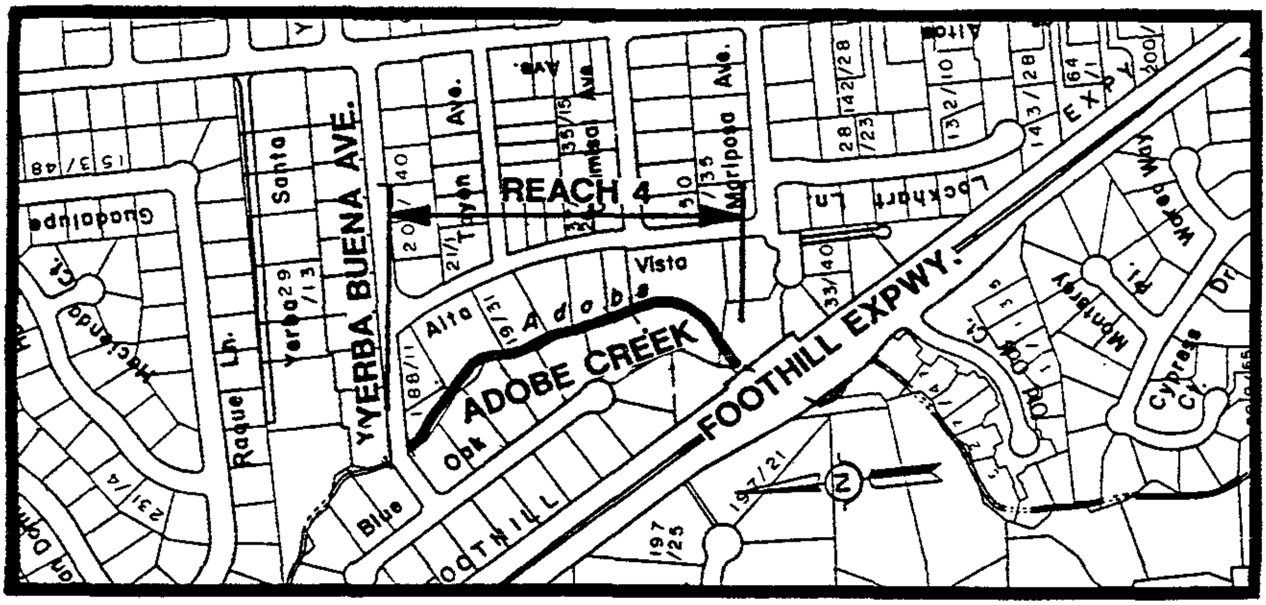
Scale: 1" = 500'

REACHES 1 AND 2

FIGURE 6



REACH 3 : UPSTREAM ALTA MESA CEMETERY TO YERBA BUENA AVENUE



REACH 4 : YERBA BUENA AVENUE TO FOOTHILL EXPRESSWAY

Scale: 1" = 500'

REACHES 3 AND 4 FIGURE 7

Reach 5: Foothill Expressway to West Edith Avenue

Reach 5 extends from downstream of Foothill Expressway to downstream of West Edith Avenue, for a total length of approximately 2,300 feet, as shown on Figure 8. This reach passes through the City of Los Altos (along the left bank), and the Town of Los Altos Hills (along the right bank).

Adobe Creek is conveyed under Foothill Expressway by a concrete box culvert. Severe erosion problems exist in the upper portions of Reach 5, where the creek channel is very steep, and wooden and concrete walls, sacked concrete slope protection, and gunite have been used to protect against erosion. In several places, the wooden walls have rotted and collapsed. This has resulted in exposing near vertical earthen banks to erosive creek flows, and has left large trees within a few feet from the top of the bank. Land uses along this reach are a mix of medium and low density residential development, with several homes on the Los Altos (left) side of the creek built extremely close to the channel.

Reach 6: West Edith Avenue to Burke Road

Reach 6 extends from downstream of West Edith Avenue to downstream of Burke Road, for a length of approximately 2,300 feet, as shown on Figure 8. This reach passes through the City of Los Altos (along the left bank), and the Town of Los Altos Hills (along the right bank).

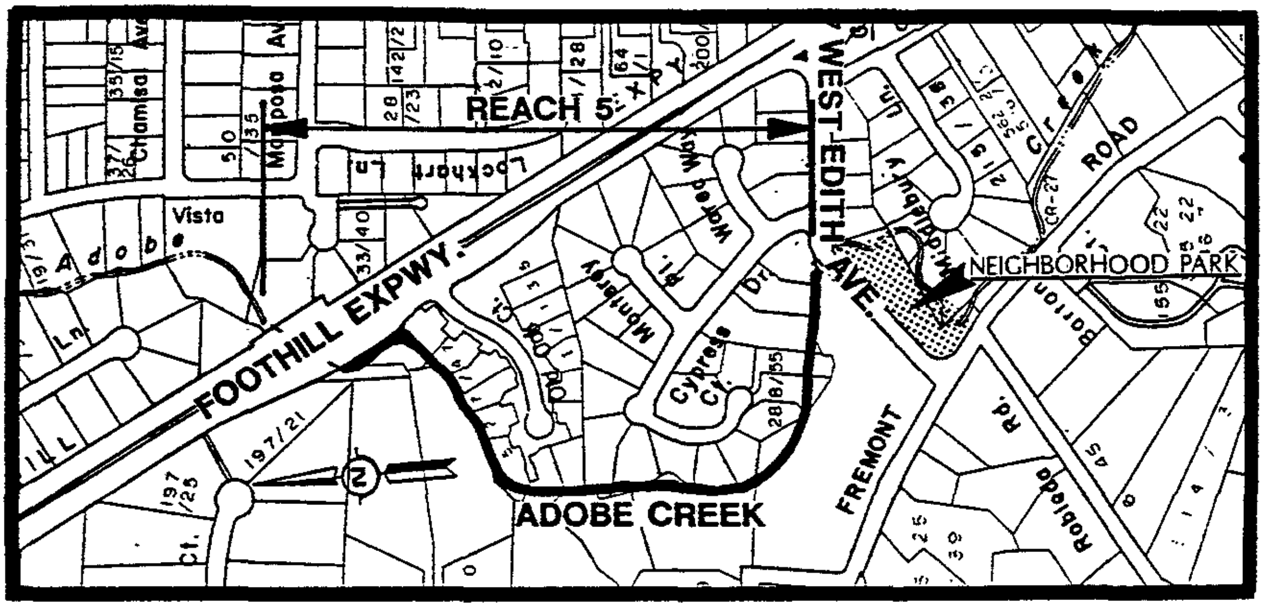
Sediment has deposited under the bridge at West Edith Avenue at the north end of this reach, due to the constricted channel immediately downstream of the bridge. This sedimentation limits the capacity of the bridge. The majority of the creek along this reach consists of a fairly flat channel slope with few erosion problems. Rock mortar walls and sacked concrete slope protection have been used for erosion control. Land uses along Reach 4 are primarily low density residential development, with several homes encroaching into the creek area. In addition, a neighborhood park is located at the north end of Reach 6 along West Edith Avenue, adjacent to the creek. Lincoln Park is located in the project area, but not adjacent to the channel.

Reach 7: Burke Road to Manresa Way

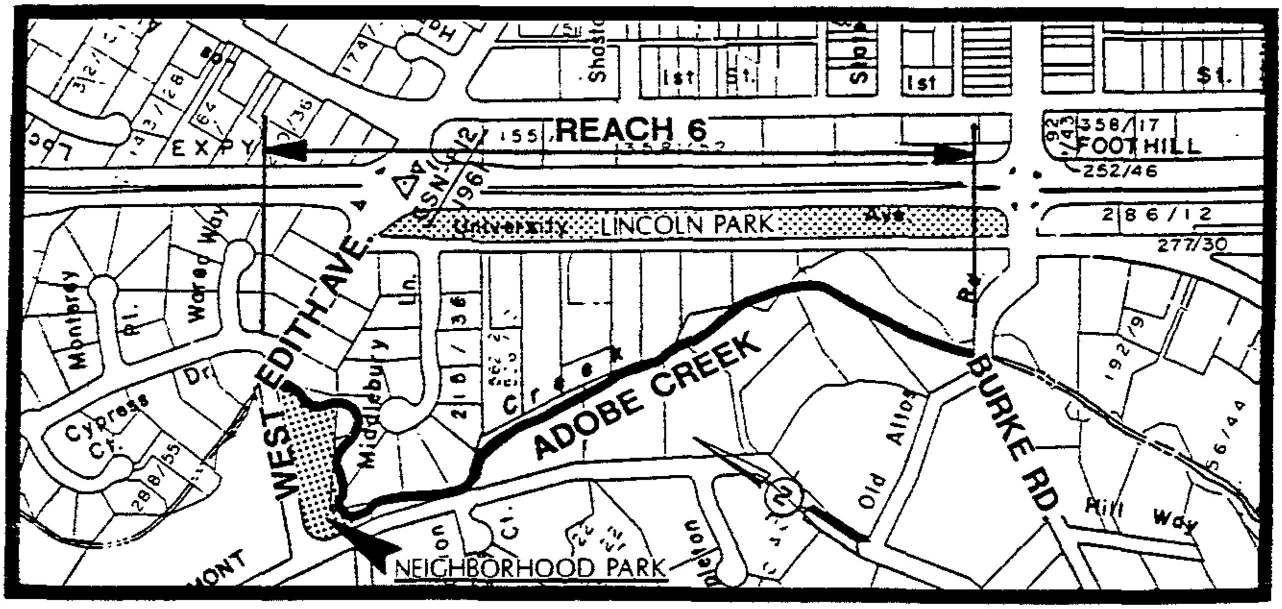
This reach extends from downstream of Burke Road to the downstream face of Manresa Way, for a total length of about 3,400 feet, as shown on Figure 9. This north portion of this reach passes through the Town of Los Altos Hills (along the right bank), while the remaining portion of the reach is located within the City of Los Altos.

The existing bridge at Burke Road is currently too small to convey the one percent flood flows. Reach 7 contains several different channel types. Upstream of Burke Road, the creek banks are lined with sacked concrete slope protection, which transition into wooden walls. The creek is mostly natural (near Shoup Park), and becomes less defined (in the Redwood Grove Nature Preserve), consisting of shallow braided channels through the trees. Farther upstream, the channel becomes more defined and gabions protect the slopes downstream of Manresa Way. Some homemade bank protection measures have been constructed along this reach.

The land uses along this reach are primarily low density residential development. In addition, Shoup Park and the Redwood Grove Nature Preserve (owned by the City of Los Altos) are located within this reach, along most the left bank of the creek, as illustrated on Figure 9.



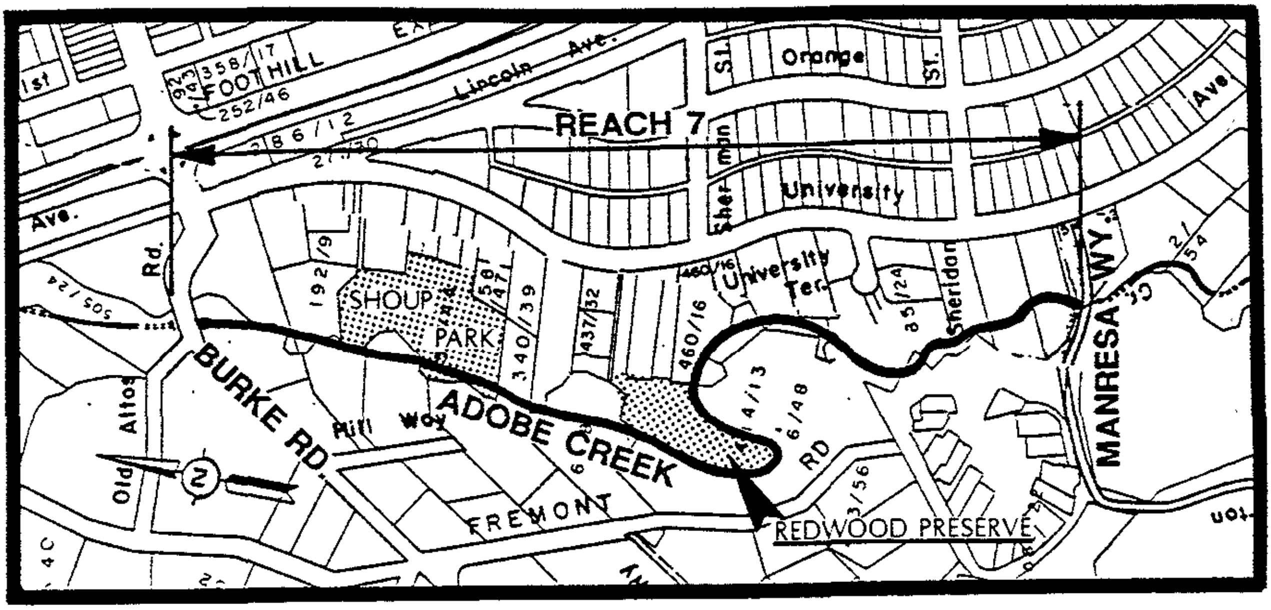
REACH 5 : FOOTHILL EXPRESSWAY TO WEST EDITH AVENUE



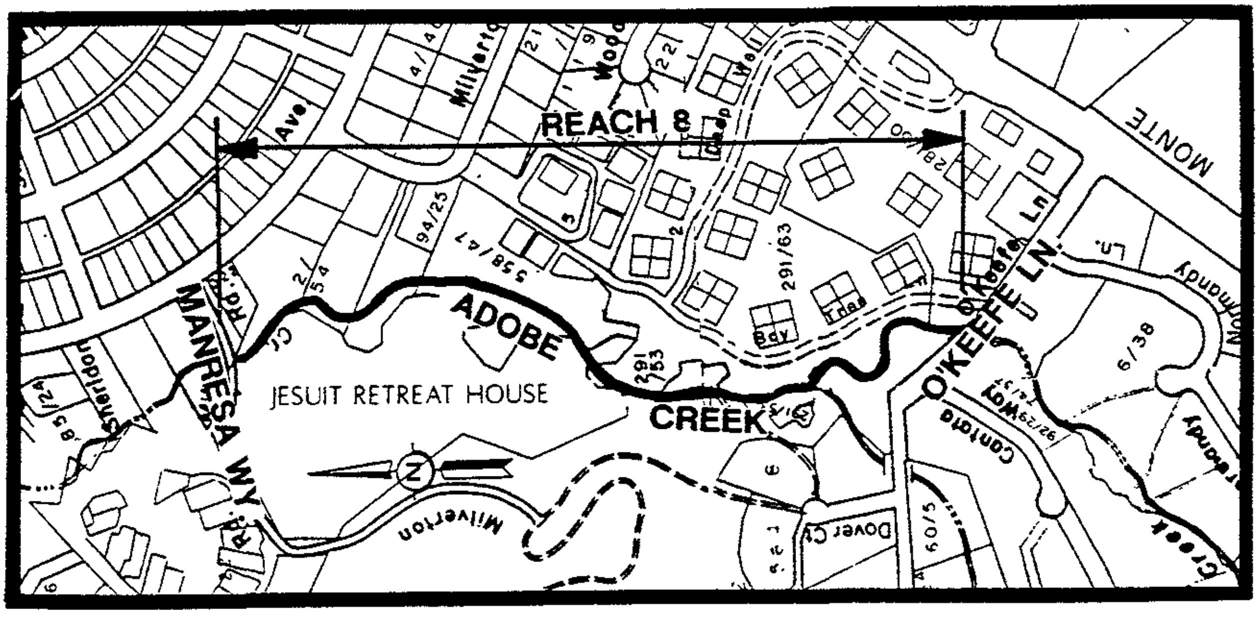
REACH 6 : WEST EDITH AVENUE TO BURKE ROAD

Scale: 1" = 500'

REACHES 5 AND 6 **FIGURE 8**



REACH 7 : BURKE ROAD TO MANRESA WAY



REACH 8 : MANRESA WAY TO O'KEEFE LANE

Scale: 1" = 500'

REACHES 7 AND 8 FIGURE 9

Reach 8: Manresa Way to O'Keefe Lane

Reach 8 extends from downstream of Manresa Way to downstream of O'Keefe Lane, for a length of about 3,000 feet, as shown on Figure 9. This entire reach is located within the City of Los Altos. The creek crossing at Manresa Way consists of a double box culvert and pipe. Immediately upstream of Manresa Way, gabion baskets line the banks to protect against creek bank erosion. Erosion is a problem throughout this reach, due primarily to the steep creek grade downstream of the O'Keefe Lane box culvert. Existing erosion control measures along this reach include sacked concrete slope protection, gunite, and rock placement. The land uses along this Reach 8 include the Jesuit Retreat House, located along the right bank, and low density residential uses along most of the left bank.

Reach 9: O'Keefe Lane to Interstate 280

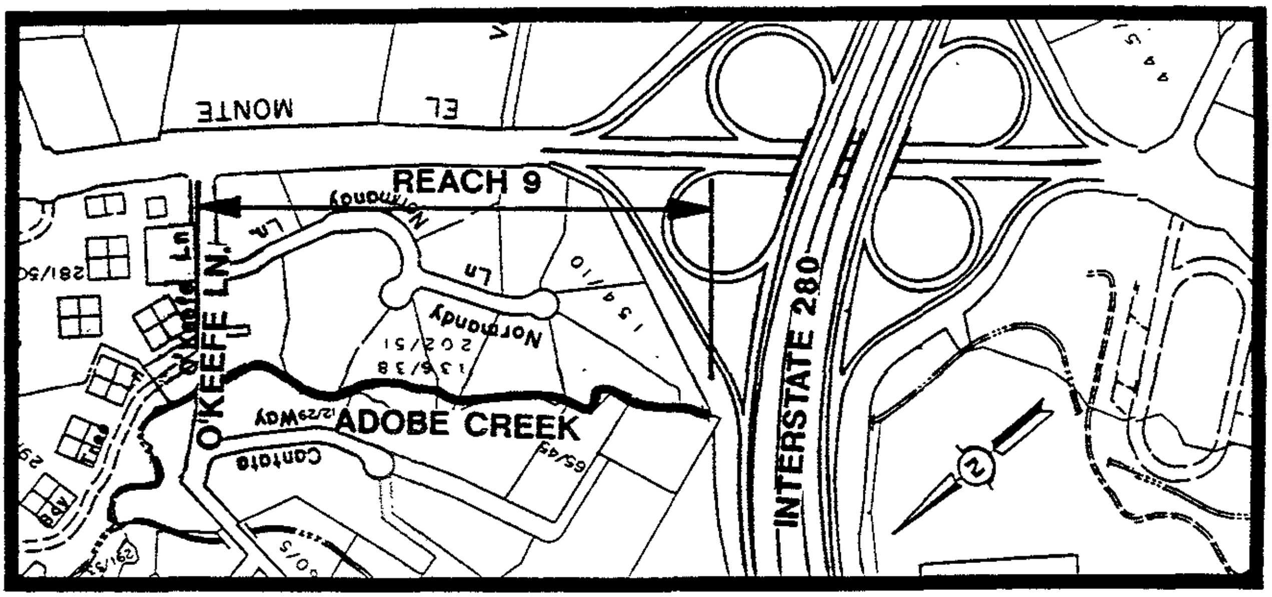
Reach 9 extends from downstream of O'Keefe Lane to downstream of Interstate 280, for a length of about 1,400 feet, as shown on Figure 10. This reach is located entirely within the Town of Los Altos Hills.

The creek along this reach is natural, heavily vegetated, shallow, and narrow. A concrete box culvert is located at O'Keefe Lane, which has significantly affected the channel, creating a shallow upstream channel and severe erosion downstream. Land uses along Reach 9 consist of low density residential development. Vacant lands are located directly adjacent to Interstate 280.

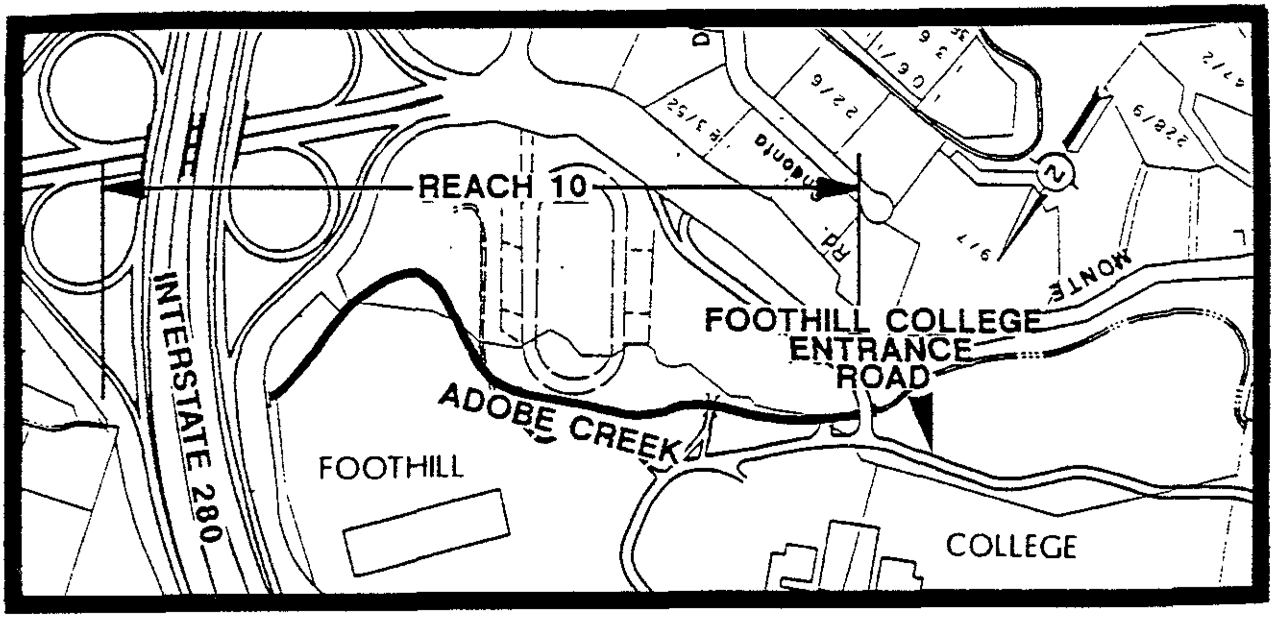
Reach 10: Interstate 280 to the Foothill College Entrance Road

Reach 10 extends from downstream of Interstate 280 to downstream of the Foothill College entrance road, for a length of about 2,000 feet, as shown on Figure 10. This reach is located entirely within the Town of Los Altos Hills.

Reach 10 contains two culvert crossings. The first is a double concrete box culvert located beneath Interstate 280. The second culvert is located at the midway point of the reach and consists of a pipe culvert placed below the natural grade of the creek, which is often partially filled with sediment and aquatic vegetation. Gunite has been placed upstream and downstream of the culvert to create transition structures. The second culvert cannot contain the 100-year flood flow. Reach 10 of the creek is heavily vegetated with mature trees and vegetation. Downstream of the pipe culvert (i.e. second culvert), maintenance buildings for Foothill Community College have been constructed at the top of the creek's left bank. In addition, ballfield dugouts and backstops encroach upon the creek on the right bank. The only land use along Reach 10 consists of the Foothill Community College property.



REACH 9 : O'KEEFE LANE TO INTERSTATE 280



REACH 10 : INTERSTATE 280 TO THE FOOTHILL COLLEGE ENTRANCE

Scale: 1" = 500'

REACHES 9 AND 10

FIGURE 10

Reach 11: Foothill College Entrance Road to El Monte Road

Reach 11 extends from downstream of the Foothill College entrance road to just downstream of El Monte Road, for a length of about 1,500 feet, as shown on Figure 11. Reach 11 is divided into 11A and 11B, due to the presence of a bypass pipe which rejoins the creek within this reach. Reach 11 is located entirely within the Town of Los Altos Hills.

Reach 11A is extremely steep with five gunite drop structures and several rock placement slope protection areas. Erosion and sedimentation is an ongoing problem in this subreach, due in part to the double-pipe culvert beneath the college entrance road. Subreach 11B extends upstream of the bypass structure. The entire creek channel within this subreach has been lined with gunite. This portion of the creek has a very mild slope and fine silts deposit on the gunite lining. Sediment deposits are a problem within the bypass exit structure, as well as flooding due to an inadequately sized channel. The only land use along both subreaches 11A and 11B is the Foothill Community College property.

Reach 12: El Monte Road to Tepa Way

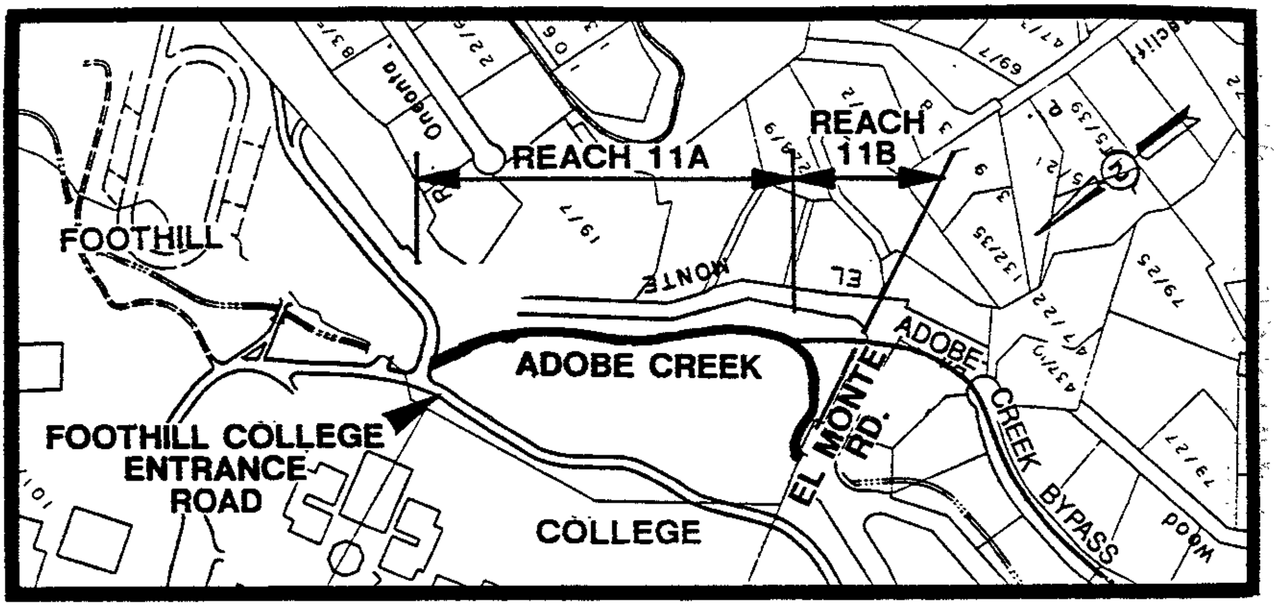
Reach 12 extends from downstream of El Monte Road to downstream of Tepa Way, for a length of about 1,800 feet, as shown on Figure 11. This entire reach is located within the Town of Los Altos Hills.

A concrete box culvert is located under El Monte Road, which continually fills with sediment due to the inadequate channel downstream. The channel slope along this reach is generally very steep, with erosion problems throughout the reach. A portion of this reach is lined with gunite. Other areas have severe erosion resulting from overbank drainage from Moody Road. Foot bridges constructed by homeowners have contributed to the flooding and erosion problems by encroaching in the creek flow area. Land uses along the left bank of the creek are low density residential development. Moody Road is located along the right bank.

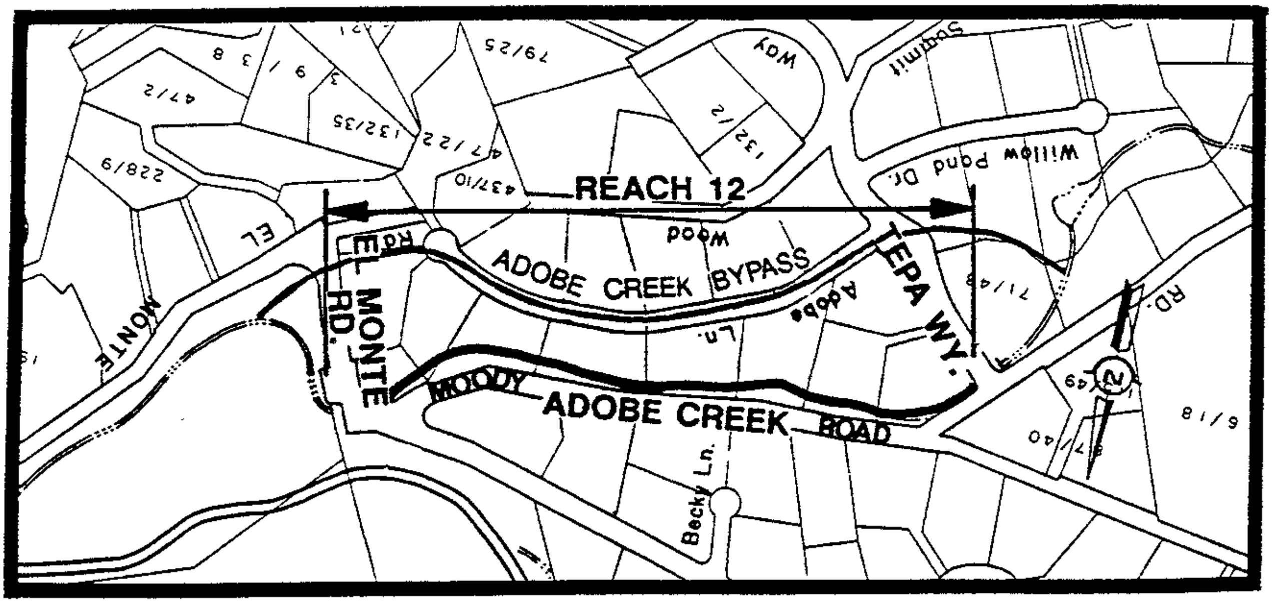
Reach 13: Tepa Way to Rhus Ridge Road

Reach 13 extends from downstream of Tepa Way to downstream of Rhus Ridge Road, for a length of approximately 1,200 feet, as shown on Figure 12. This entire reach is located within the Town of Los Altos Hills.

A bypass pipe inlet structure is located upstream of Tepa Way. This reach is heavily vegetated with fairly steep slopes. Rocks have been installed for erosion protection. Tepa Way contains a concrete box culvert, which is undersized for the 100-year flood flow. The land uses along Reach 13 consist of low density residential uses, which are set back from the creek.



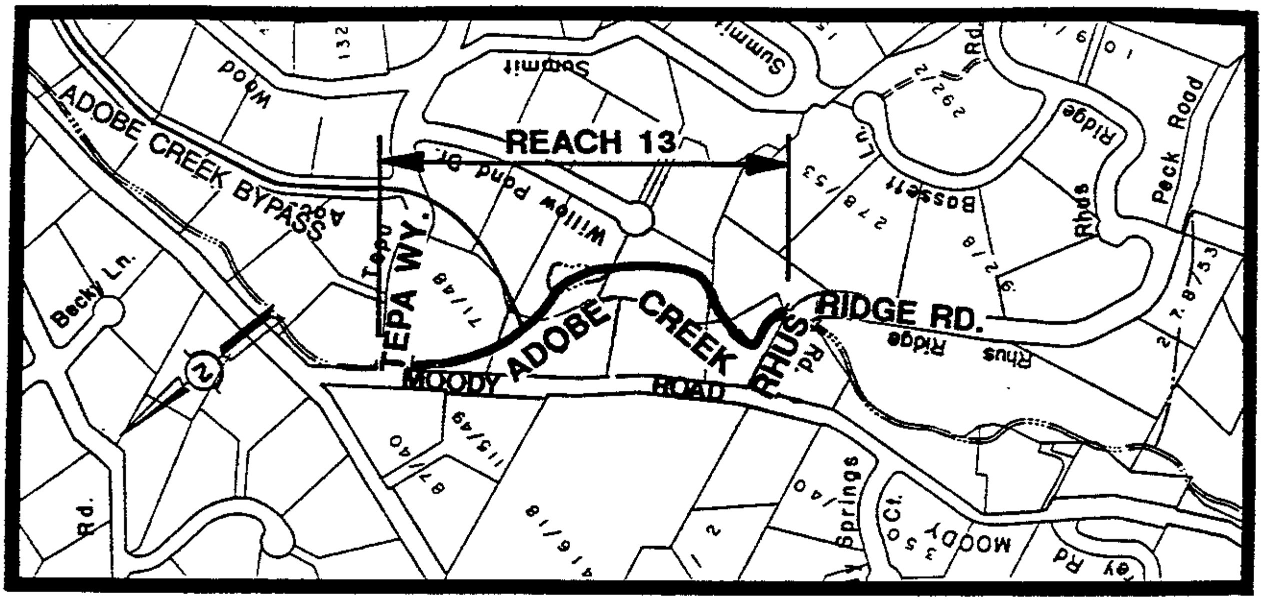
REACH 11A AND 11B: FOOTHILL COLLEGE ENTRANCE ROAD TO EL MONTE ROAD



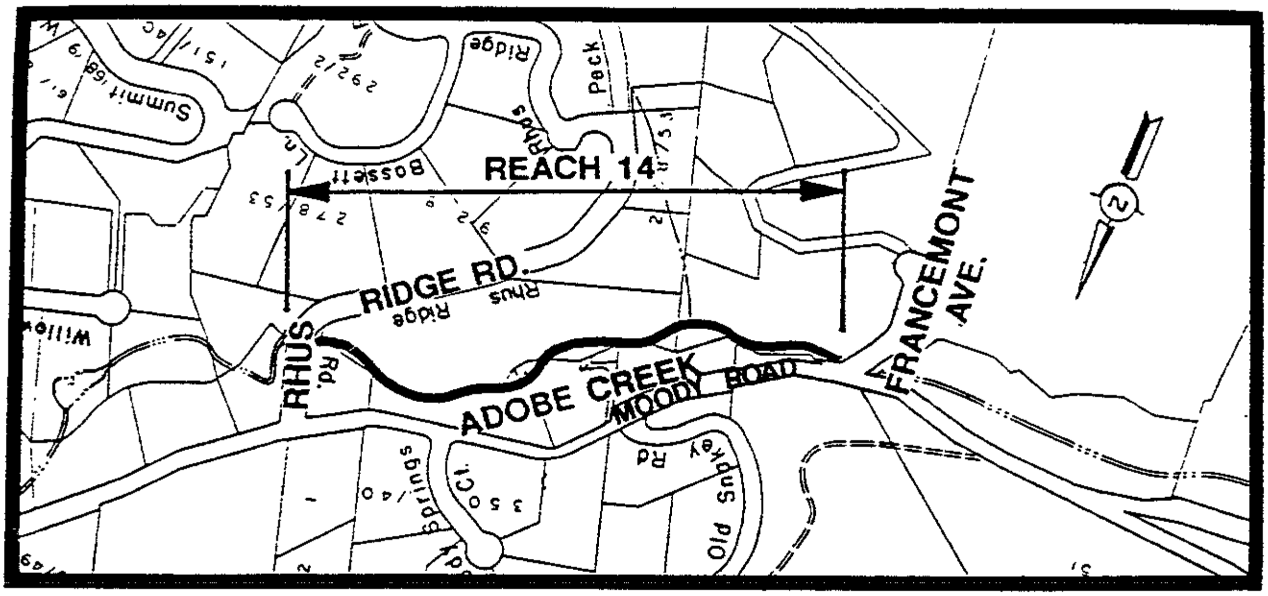
REACH 12 : EL MONTE ROAD TO TEPA WAY

Scale: 1" = 500'

REACHES 11A, 11B AND 12 FIGURE 11



REACH 13 : TEPA WAY TO RHUS RIDGE ROAD



REACH 14 : RHUS RIDGE ROAD TO FRANCEMONT AVENUE

Scale: 1" = 500'

REACHES 13 AND 14 FIGURE 12

Reach 14: *Rhus Ridge Road to Francemont Avenue*

Reach 14 extends from downstream of Rhus Ridge Road to downstream of Francemont Avenue, for a length of approximately 1,700 feet, as shown on Figure 12. This entire reach is located within the Town of Los Altos Hills.

Two large drop structures (five to six feet) have created a mild slope in this reach minimizing erosion. The Rhus Ridge Road crossing is undersized for the 100-year flow. Land uses along this reach consists of low density residential development, with some homes constructed near the creek, although the creek shows no encroachment problems.

Reach 15: *Francemont Avenue to Murietta Lane*

Reach 15 extends from downstream of Francemont Avenue to downstream of Murietta Lane, for a length of about 2,600 feet, as shown on Figure 13. This entire reach is located within the Town of Los Altos Hills.

A new crossing at Francemont Avenue was recently constructed and consists of an arched concrete culvert. In addition, the Adobe Creek Lodge Road and Bellucci Drive bridges were recently constructed in 1993 and are both single span wooden bridges constructed over a newly built excavated channel. The new channel is lined with a combination of rock riprap and broken concrete. The land uses along this reach consist of low density residential development on large lots, with no encroachment into the creek.

Reach 16: *Murietta Lane to Upstream End of Project*

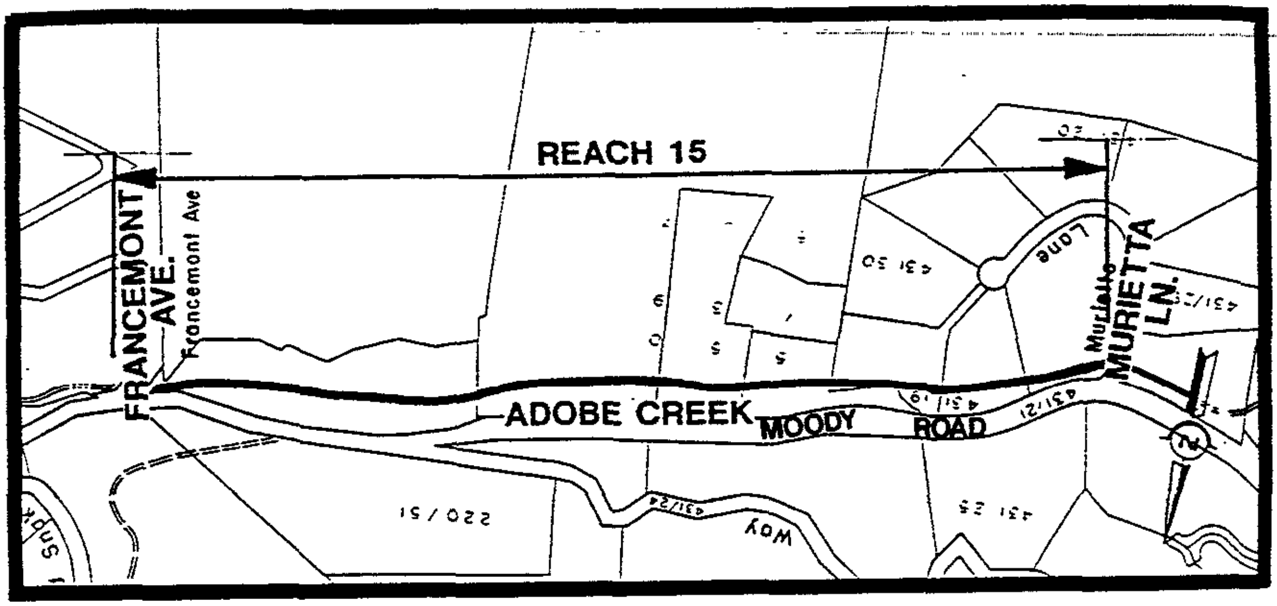
Reach 16 extends from downstream of Murietta Lane to the limits of this planning study, a distance of approximately 4,400 feet, as shown on Figure 13. This entire reach is located within unincorporated Santa Clara County.

The majority of this reach lies adjacent to open pasture land owned by The Trust for Hidden Villa (a nonprofit corporation). Some erosion occurs within this reach. However, this erosion does not affect any structures in the area due to the lack of development along this reach.

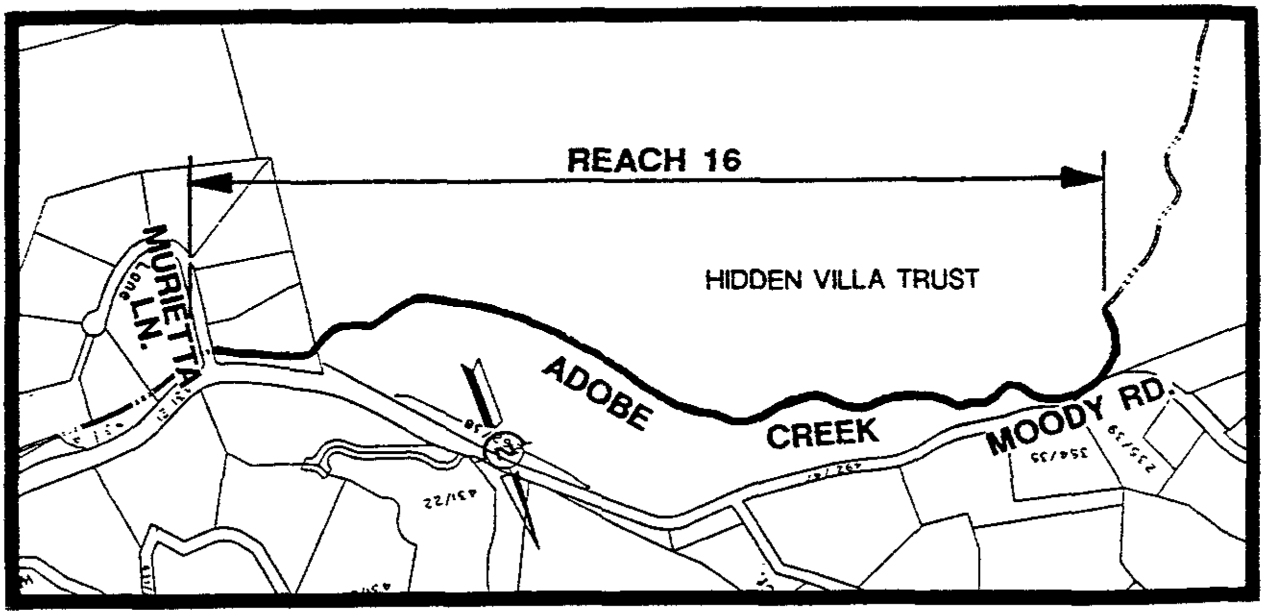
2. IMPACTS

For the purposes of this project, a land use impact is considered significant if the project would:

- result in a substantial loss of open space; or
- substantially adversely change the type or intensity of existing or planned land use in the area; or
- have a direct and substantial impact on facilities within existing land uses; or
- be incompatible with surrounding land uses or with the general character of the surrounding area.



REACH 15 : FRANCEMONT AVENUE TO MURIETTA LANE



REACH 16: MURIETTA LANE TO UPSTREAM END OF PROJECT

Scale: 1" = 500'

REACHES 15 AND 16

FIGURE 13

LAND USE IMPACTS ASSOCIATED WITH PROJECT

The District would only perform activities in areas where it has existing fee title or appropriate easement rights-of-way. For properties where only erosion and/or vegetation control is required, and the District has no right-of-way, the District would prepare a Limited Maintenance Easement Deed (LED). Owners of these properties would be requested to dedicate a limited easement to the District so that the District would have the necessary legal authority to conduct maintenance activities within the easement. In areas where a property owner chooses not to dedicate a limited easement, the District would not install or maintain bank improvements, since it would have no legal authority in these areas. Property owners would be responsible for creek maintenance and liabilities associated with their property.

The proposed channel modifications would not result in any loss of open space, since the modifications would not result in the development of structures affecting vacant or open space areas. The project would not change the intensity of existing or planned land uses in the area, nor would it be incompatible with the surrounding land uses which are primarily residential development, since the project would not substantially alter the configuration or character of the existing creek channel.

The project in Reach 5 would require a substantial amount of the Rogez property that is currently being developed into a three-lot subdivision (refer to Figure 4). The use of this property by the project would not result in a significant land use impact, however, for the following reason. As part of the subdivision development, the Town of Los Altos Hills has required that the developer dedicate an easement on the property sufficient to construct the project. The channel modifications through this reach would be constructed only if the Town of Los Altos Hills obtains the easement.

Construction of the proposed channel modifications would result in a land use impact upon Foothill College (Reach 11). Specifically, the proposed modifications would require the removal of 67 parking spaces of Parking Lot A. Foothill College currently has a total of 3,450 parking spaces on campus to serve an enrollment of 14,500 students and a faculty and staff of 400. Thus, under existing conditions, Foothill College has a shortage of available parking. Given this high demand for parking at Foothill College, the loss of any parking spaces is considered a significant land use impact.

The project would result in potentially significant land use impacts during construction of the proposed channel modifications. These impacts could result in disruption upon adjacent residential uses during construction activities. These impacts would include additional noise and dust impacts, impacts from pile driving, potential loss of privacy, and property damage impacts. The project may also result in visual impacts associated with the removal of trees or other vegetation. These impacts are addressed within **Sections II., H., Visual and Aesthetics** and **Section II., I., Construction-Related Impacts**, of this EIR.

LAND USE IMPACTS ASSOCIATED WITH MITIGATION MEASURES

In **Section II., D., Vegetation and Wildlife**, of this EIR, there is a detailed discussion of mitigation sites which are required to offset riparian impacts of the project. These proposed mitigation sites consist of up to five sites located on private or public lands adjacent to Adobe Creek. Use of these lands for the mitigation sites would affect the existing land uses. In most cases, this impact would not be significant, since it would not change the land use of the mitigation site. There is, however, one exception to this, which is described in the following paragraph.

One of the mitigation sites identified is within the existing West Edith Avenue Park, a one acre neighborhood park owned and maintained by the Town of Los Altos Hills. As described in **Section II., D., Vegetation and Wildlife,** of this EIR, it has not been determined exactly how much of this park would be needed for mitigation. Preliminary mitigation plans call for a strip of land along the creek, up to 0.7 acres in size, to be used for riparian restoration. Use of this portion of the park would require removing an existing earthen pathway and removing some non-native vegetation. This mitigation would result in restricting public access to the creek area portion of this park within the Town of Los Altos Hills. The District, the project biological consultant, and members of the Town of Los Altos Hills Environmental Design Committee have met at the park site and have discussed the use of the park's creek area as a mitigation site. The Town has tentatively agreed to the proposed mitigation plans, contingent on review of the final plans, and does not consider the use of a portion of the park for riparian restoration as adversely affecting park use. For this reason, the use of the park land is not considered a significant land use impact.

3. MITIGATION

- The District would relocate and replace the 67 parking spaces that would be lost at Foothill College Parking Lot A due to construction of the proposed channel modifications. Foothill College has requested that the replacement parking spaces be constructed prior to the removal of existing parking spaces.
- Please refer to the respective sections of the EIR for mitigation proposed for construction-related impacts associated with the proposed channel modifications.

With implementation of the above mitigation, land use impacts of the project would be reduced to a less-than-significant level.

B. GEOLOGY

1. EXISTING SETTING

Adobe Creek originates in the Santa Cruz Mountains, and flows in a northerly direction, to the Palo Alto Flood Basin. Adobe Creek passes through a narrow, alluviated mountain valley, then crosses through shallow marine deposits across the alluvial plain at the base of the Santa Cruz Mountains. Within the project area, the creek flows from an elevation of 360 feet above sea level in the foothills of the Santa Cruz Mountains, through the relatively level Santa Clara Valley to an elevation of 50 feet at El Camino Real.

SOILS AND GEOLOGY

Soils of the project area have been mapped as Azule, Gilroy, Garretson, Pleasanton, and Zamora series (Soil Conservation Service, 1968). These soils are classified as silty clay loam, clay loam, gravely loam and loam. The project site is underlain by older alluvial fan deposits and older alluvium stream deposits. The site is generally underlain by non-marine sedimentary materials, known as the Santa Clara formation. The thickness of these deposits varies from zero to 200 feet at the different locations along the creek. Although the subsurface soil conditions have not been directly examined at most locations, they are generally characterized as loose, poorly sorted alluvium consisting of clays, sands, and gravels with some cobbles and boulders. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creekbed and in both of its banks.

GROUNDWATER

Surface and groundwater are expected to occur at seasonally varying depths along the subject portion of the creek channel. At some locations, geotechnical hazards may be greater due to changes in the groundwater levels. The depth to groundwater at Adobe Creek is expected to range from approximately 20-30 feet in the vicinity of El Camino Real, to over 50 feet upstream. In the upper portion of the creek, perched groundwater flows into Adobe Creek, while downstream, Adobe Creek causes groundwater recharge. These perched groundwater flows may require dewatering or other methods during construction of creek bottom and channel modifications.

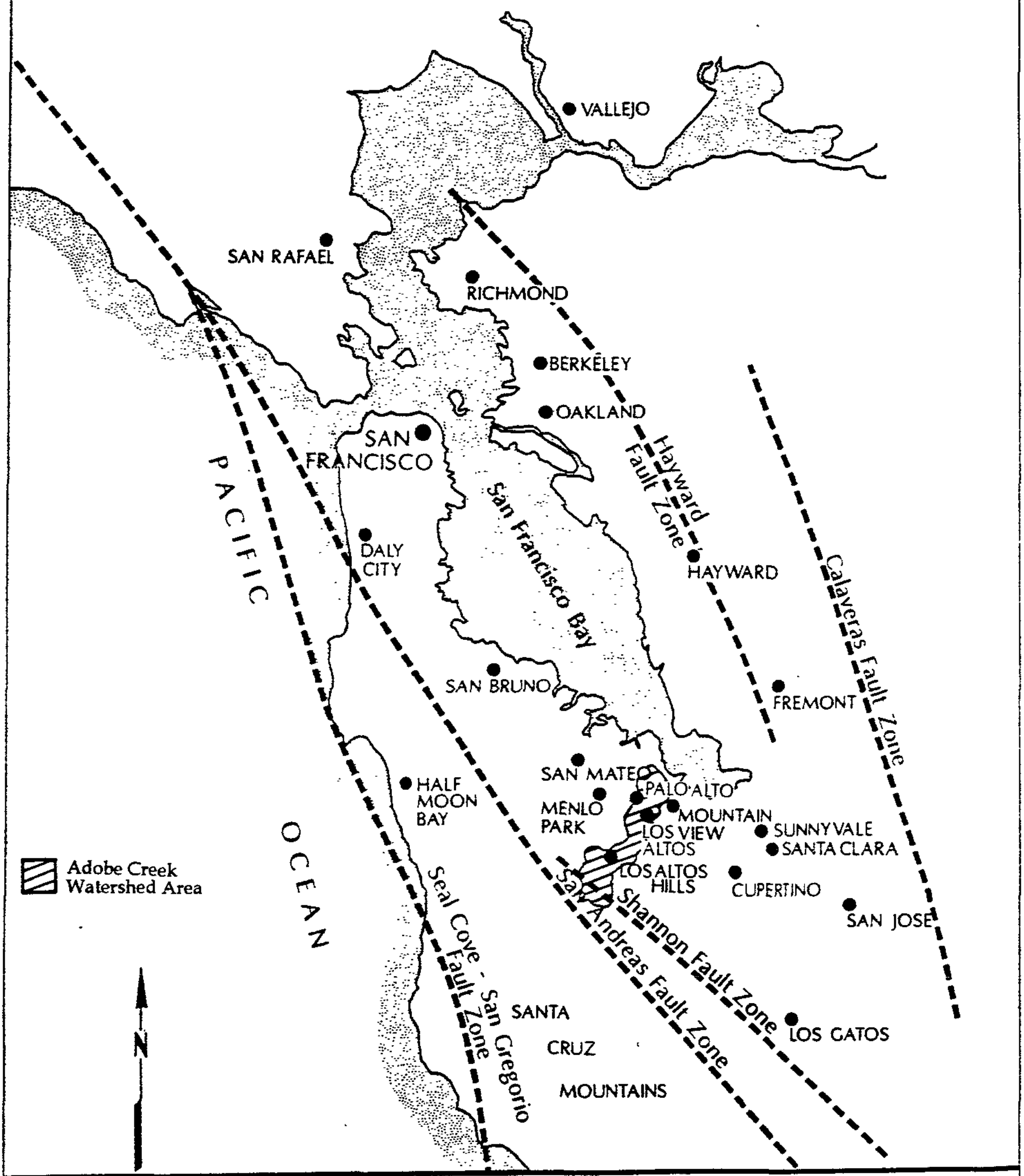
CHANNEL AND BANK STABILITY

There are several locations along the subject portion of Adobe Creek where the creek bank or channel is considered unstable. In a comprehensive field inspection the District identified a total of 72 erosion sites, 20 of which were classified as "major", 28 as "minor", and 24 as "noted only" (sites that will not be repaired in the near future). The project proposes to repair the "major" erosion sites. Three of the erosion sites were repaired in 1995 due to the critical nature of the erosion at those locations. The project proposes to repair the remaining 17 "major" erosion sites and install rock weirs at the eight locations. These erosion sites are located within Reaches 1, 2, 3, 4, 5, 8, and 12 (refer to Figure 3 and Table 1). The District has also identified eight locations where channel bottom stabilization would be beneficial. A description of the proposed measures at each of these erosion repair sites is presented in the Engineer's Report.

According to information provided by the Foothill College maintenance staff, the southeast (left) bank along Reach 11 within the Foothill College property has a past history of slope instability. A landslide in the early 1980's on this side of Adobe Creek closed El Monte Road for several months. This landslide was repaired by the Town of Los Altos Hills. However, no documentation of the nature, extent, and quality of the repair work is available.

SEISMICITY AND SEISMIC HAZARDS

The proposed site is located within the seismically active San Francisco Bay region. The primary regional faults are presented on Figure 14. The closest mapped fault to the site is the Shannon Fault, which ranges from a distance of 0.25 miles to 3.75 miles south and southwest of the project site, respectively. The San Andreas Fault ranges from a distance of approximately three to eight miles to the southwest. The Hayward and Calaveras Faults are located approximately 11 miles and 16 miles northeast of the project site, respectively. With the exception of the Shannon Fault, which is considered potentially active, all of these faults are considered active. No mapped faults or fault traces are located on the site. The most significant seismic hazards affecting the site are liquefaction, lurching and lateral spreading, caused by a major earthquake on one of the major faults in the region. The potential for earthquake induced liquefaction, lurching, and lateral spreading is considered moderate to high at the majority of the stream modification sites.



Source: California Division of Mining and Geology

PRIMARY FAULT ZONES IN THE SAN FRANCISCO BAY AREA FIGURE 14

2. IMPACTS

For the purposes of this project, a geologic impact is considered significant if the project would:

- be located on a site with geologic features which pose a substantial hazard to property and/or human life (i.e., an active fault, active landslide or unstable slope); or
- expose people or property to major geologic hazards that cannot be mitigated through the use of standard engineering design and seismic safety design techniques.

A preliminary geologic assessment of the project site has been prepared by Warham Stejer and Robert Tepel of the District, and is presented in Appendix B of this EIR. Based on the results of this assessment, the proposed stream channel modifications would be generally compatible with the local geology. The project would not be located on a site with geologic features which pose a substantial hazard to property or human life. The project would also not expose people or property to major geologic hazards that cannot be mitigated through the use of standard design techniques.

However, because the subsurface soil conditions have not been directly examined at most locations and because the project site is generally underlain by loose, poorly sorted alluvium, construction along the Adobe Creek channel could result in potential geologic impacts.

Based upon the above discussion, the project could result in potentially significant geologic impacts due to slope instability, which would be reduced to a less-than-significant level by implementation of the recommendations of the preconstruction geotechnical investigation.

3. MITIGATION

The following mitigation would reduce the potential for project-related geologic impacts:

- A complete geologic investigation of the project site shall be conducted, and specific recommendations made to the District to mitigate potential geotechnical hazards along the channel prior to project construction, which may include excavation dewatering, shoring and bracing, and other stabilizing measures. All recommended measures would be implemented into the project.
- All new culverts and other channel structures would be constructed in accordance with appropriate building code standards to withstand seismic shaking.

With implementation of the above mitigation, potential geologic impacts of the project would be reduced to a less-than-significant level.

C. HYDROLOGY, DRAINAGE AND FLOODING

1. EXISTING SETTING

HYDROLOGY AND DRAINAGE

Mean annual precipitation in the project area ranges from approximately 34 inches in the upper watershed, to 14 inches on the valley floor. The area receives about 90 percent of this rainfall from November through March. Rainfall runoff in the upper portion of the watershed produces the majority of the flow in Adobe Creek. Due to the steep nature of the upper watershed, most major storms produce high intensity runoff for short durations. In the lower watershed area downstream of the project reach, some of the runoff from the urbanized areas is contained in the storm sewer system.

The one percent and 10 percent flood flows for Adobe Creek have been determined by the District. The peak one percent flood flow for Adobe Creek is estimated to be 2,900 cubic feet per second (cfs) in the project reach. The peak 10 percent flood flow is approximately 1,600 cfs. The peak one percent and 10 percent flood flows for Adobe Creek are presented in Table 2. For a complete discussion of the hydrology of Adobe Creek, refer to the Engineer's Report prepared for the project.

TABLE 2
ONE PERCENT AND TEN PERCENT FLOOD FLOWS FOR ADOBE CREEK

Location	1% Peak (cfs)	10% Peak (cfs)	Drainage Area (square miles)
At Francemont Avenue	1,800	900	4.60
At Bypass Channel Entrance	2,000	1,100	5.01
At Bypass Channel Confluence	1,100[1]	1,000	5.01
Adobe Creek upstream of Purissima Creek	2,000	1,100	5.53
Adobe Creek at Foothill Expressway	2,700	1,400	7.10
Adobe Creek at El Camino Real	2,900	1,600	8.90
Adobe Creek upstream of Barron Creek	3,080	1,820	10.84

[1] 900 cfs in bypass channel

FLOODING

The project site and many of the adjacent land uses are located within the one percent floodplain as shown in the "Problem Definition" chapter of the Engineer's Report. Areas within the floodplain would be inundated to a depth of approximately one to two feet during the one percent flood.

According to the Engineer's Report, 11 of the 19 existing culverts along the project portion of Adobe Creek cannot convey the one percent flood flow. Seven of these cannot convey the 10 percent flood flow. In addition to existing flood problems due to culvert and bridge capacities, inadequate capacity of the Adobe Creek channel itself at various locations would result in flooding of the immediate area along the top of bank during a one percent flood event.

Adobe Creek has a history of flooding. The creek has had significant flooding in 1952, 1955, 1983, 1986, 1995, and 1998. Overall, along Adobe Creek upstream of El Camino Real, the District estimates that approximately 220 structures would be flooded during a one percent flood flow on Adobe Creek, resulting in damages of approximately $2.7 million (refer to the Engineer's Report). Over 190 single family residential units, five multi-family units, and 26 businesses would be inundated by floodwaters. Over the long-term, average annual flood damages in the project area are estimated at approximately $110,300. Flood damages are projected to occur as frequently as every three years.

2. IMPACTS

For the purposes of this project, a drainage or flooding impact is considered significant if the project would:

- increase the potential for flood-related property loss or hazard to human life; or
- significantly increase the peak stormwater runoff.

The project itself is designed to reduce the potential for flood-related hazards and/or property loss along the project portion of Adobe Creek. The proposed channel modifications would not increase the peak stormwater runoff. Upon completion of the project, the one percent floodplain would be reduced along Adobe Creek within the project limits. This is a beneficial impact of the project.

A major goal of the project is to contain the one percent flood within the creek channel as much as possible and provide appropriate modifications to reduce flooding hazards. Therefore, the proposed project would have a beneficial impact upon the hydrological and drainage characteristics, and flood protection, of Adobe Creek.

3. MITIGATION

- No mitigation required.

D. VEGETATION AND WILDLIFE

The following discussion is based on a biological investigation prepared for the project by H.T. Harvey and Associates.

1. EXISTING SETTING

OVERVIEW OF THE PROJECT AREA

The downstream boundary of the project area is El Camino Real and the upstream boundary is upstream of Moody Road on The Trust for Hidden Villa property. Individual proposed project sites are located intermittently between these limits. Refer to Figure 3 for the locations of the reaches of the creek and the individual project elements.

Upstream of the project area the riparian habitat comprises broad stands of forest which mix with surrounding forests on lightly developed hillsides. These upstream areas support relatively pristine riparian habitat that, along with the adjacent upland habitat, supports a wide array of plant and wildlife species. These upstream areas are an important source of plant materials and wildlife that move downstream into the project area. The wildlife that move into the project area from upstream of the creek may ultimately reside within the project area, or temporarily forage there.

Downstream of the project area, the creek is a completely channelized concrete drainage, which supports little or no riparian vegetation. This channelized drainage constitutes a potential barrier to the upstream movement of fish due to the high velocity of flows along the smooth surfaces and a lack of adequate resting pools during portions of the year.

The creek is vegetated with trees, shrubs and groundcovers along most of the project area. This riparian corridor contains both native and non-native plant species, and mixes with adjacent landscaping, making it difficult to define the limit of the riparian corridor in many areas. The presence of this adjacent landscaping provides some additional habitat for wildlife, especially birds, but is also a source of invasive non-native plant species. These invasive non-native species occupy areas throughout the riparian corridor that could otherwise be occupied by native species.

The riparian habitat within the project area is also highly disturbed due to adjacent development and artificial surfaces (cement, gunite, wood walls, sack concrete). Unstable, eroding banks also contribute to lower habitat values by slowing the establishment of vegetation. In some locations the creek has been moved by landowners. Because of extensive disturbance and urbanization, there are very few areas dominated by native species that would be considered high value wildlife habitat. Most habitats within the project area are of low to medium wildlife value due to the disturbed nature of the habitat. Flow in the creek is intermittent in most areas, and the channel is typically dry for most of the year. An exception to this is near Foothill College (Reaches 9, 10, and 11), where natural upstream seeps provide year-round flow.

The creek channel itself is steep-banked in most areas due to historic filling by orchard farmers, and more recently by landowners, in attempts to protect failing banks and extend back yards. Adjacent yards, fences and out-buildings generally extend to the edge of the creek's banks. Also included among the bordering properties are some commercial sites, Alta Mesa Cemetery, and Foothill Community College. Numerous roads cross or parallel the creek.

The Adobe Creek Restoration Plan was prepared for The Trust for Hidden Villa, the Town of Los Altos Hills, and the City of Los Altos in 1989 (Habitat Restoration Group 1989). This plan described the resources and conditions along the creek and provided a wide variety of recommendations relating to revegetation, bank stabilization, wildlife and fisheries habitat enhancement, recreational opportunities, and hydrologic enhancements. Many of those recommendations have been incorporated into the biological study for the project.

BIOTIC SURVEY AND MAPPING METHODS

The project area, as defined for biological impacts, consists of those areas where the District is proposing to construct a project element and sites where the maintenance program may impact biotic resources. Since the project does not consist of a continuous channel modification, biotic surveys were conducted only at sites where project work is proposed.

H. T. Harvey and Associates conducted field surveys of the site during October through December of 1994, and May through July of 1995. Staff biologists identified plant communities, reviewed botanical and wildlife resources, surveyed for special status plant habitat, and determined potential project impacts. Information from previous reports (H. T. Harvey and Associates, 1993, Habitat Restoration Group, 1989) provided background for surveys and was incorporated into this analysis, where applicable.

Staff wildlife biologists surveyed the project sites, upstream and downstream areas, and adjacent uplands for general wildlife habitat and species occurrence, special status species presence and raptor nesting locations. No in-depth sampling techniques were employed. Initial reconnaissance indicated that the habitats to be impacted were already highly disturbed and of low quality. Additionally, there are extensive data on wildlife use of other urban riparian habitats in the county (eg. the Guadalupe River). These factors influenced the decision not to conduct long-term or more in-depth sampling.

All project areas, plus 0.25 miles upstream and downstream of the site, were surveyed in March, August, and September, 1994, and February, 1995 for fish, amphibians and reptiles. The March - February period is considered optimal for amphibian/aquatic reptile surveys. This survey period is also considered adequate for resident fish surveys. Timing surveys to coincide with steelhead migration periods was irrelevant, given that downstream barriers precluded this species from entering the project reaches. All sites were surveyed during daylight hours, and the Foothill College channel modification site was also visited during the evening hours. All pool habitats encountered were additionally sampled by dip netting for fishes and amphibian larvae. Except for the Foothill College site, most areas were dry during the majority of the survey period.

Project boundaries for the channel modification and culvert replacement sites were located in the field using District construction plans overlain on aerial photographs. The locations of the erosion repair sites were identified using site photographs provided by the District. The dimensions of erosion repair construction sites were determined in the field by staff biologists, using construction descriptions provided by the District. The project area was surveyed by staff biologists, accompanied by District maintenance supervisors, to measure those areas in which routine maintenance would involve biotic impacts.

Habitats, when of sufficient size, were delineated onto photocopies of aerial photographs (with a scale of one inch = 50 feet) and measured using a planimeter. Habitats that occurred beneath the canopies of other habitats, or were too small to be distinguished on the photographs, were measured directly in the field. Total habitat acreages were determined from both field habitat maps and direct field measurements.

BIOTIC HABITATS

The habitats that occur within the project construction areas are described below. The total acreages of these habitat types on all project sites within the entire project area are provided in Table 3. Vascular plants observed on the project sites and wildlife species observed, or expected to occur on the project sites are listed in Appendix C.

The habitat areas do not include acreage that may be affected by future general maintenance activities but are typical of sites which may vary in location and size from year to year.

Mixed Riparian Forest

Vegetation A narrow strip of mixed riparian vegetation was observed on the banks along most of the creek. Generally, riparian habitat extends to the top of the bank, or slightly beyond. The majority of trees are located on the upper banks. Extremely steep, unvegetated banks shaded by overstory are also common along the channel. Where bank topography is less steep, lower banks support occasional trees and shrubs.

Many native trees are present along the creek; however, non-native species are frequently intermixed, or sometimes clustered in relatively large stands. The predominant native tree species of the project area are coast live oak (*Quercus agrifolia*) and California bay (*Umbellularia californica*), with occasional valley oak (*Quercus lobata*), blue elderberry (*Sambucus mexicana*), and California buckeye (*Aesculus californica*). Willows (*Salix* sp.) occupy the lower channel banks in some areas. Non-native trees occur frequently in all areas, and include blue gum (*Eucalyptus globulus*), Chinese tree-of-heaven (*Ailanthus altissima*), black locust (*Robinia pseudo-acacia*) and elm (*Ulmus* sp.).

The shrub understory, consisting of native and non-native species, is sparse in many areas due to shading by trees. Typical understory species include poison oak (*Toxicodendron diversilobum*), periwinkle (*Vinca* sp.) and English ivy (*Hedera helix*). Unvegetated banks within the mixed riparian forest consist of bare soils or artificial surfaces such as concrete, gabion and gunite.

Wildlife The structural and species diversity of the disturbed riparian habitat adjacent to residential areas along Adobe Creek offers a combination of foraging opportunities and cover that is of value to wildlife. There are more than 225 species of wildlife expected to use riparian habitats in Santa Clara County (CDFG Wildlife Habitat Relationships Database, 1996). While Adobe Creek is degraded and has extensive modifications (eg. gunite) and much of the native tree canopy has been replaced by horticultural plantings, the creek still likely supports most of these species (see wildlife list, Appendix C). Species such as the Warbling Vireo (*Vireo gilvus*), Bullock's Oriole (*Icterus bullocki*), and Black-headed Grosbeak (*Phuecticus melanocephalus*) forage in the tree canopy or sub-canopy along this creek, while Bewick's Wren (*Thryomanes beweckii*), Spotted Towhee (*Pipilo maculatus*), and Wrentit (*Chamaea fasciata*) prefer the understory. Riparian areas are known to concentrate and support relatively high number of migrant birds that use riparian habitats as migratory stopovers and foraging sites (Mayer, 1988).

TABLE 3
HABITAT ACREAGES

Habitat	Acres
Mixed Riparian Forest	0.84
Landscaped/Non-native	1.85
Riverine	1.12
Developed Area	0.57
Culverts/Structures	0.53
Scrub	0.05
Total Site Acreage*	4.06

*Habitats overlap, therefore the total site acreage is less than the sum of the habitats shown above.

Small mammals expected to occur in this creek channel include deer mouse (*Peromyscus maniculatus*), and the non-native fox squirrel (*Sciurus niger*). The California ground squirrels (*Spermophilus beecheyi*) and eastern gray squirrels (*S. carolinensis*) were observed. Predators such as the striped skunk (*Mephitis mephitis*) and raccoon (*Procyon lotor*) are attracted to these habitats by an abundance of prey. Raccoon tracks were observed. The big brown bat (*Eptesicus fuscus*) and little brown myotis (*Myotis lucifugus*) are predicted to forage for insects over the creek.

Riparian habitats also function as movement corridors for dispersal of numerous wildlife species (especially juveniles) and are particularly important in urbanized areas where other habitats may have been lost. Examples of several wildlife species that both live and move through the riparian corridor of Adobe Creek include a number of avian species such as the Black Phoebe (*Sayornis nigricans*), and Bewick's Wren (both observed) and mammals such as the striped skunk and raccoon.

Reptiles which are expected to occur in this habitat include western fence lizards (*Sceloporus occidentalis*), southern alligator lizards (*Elgaria multicarinata*), northern alligator lizards (*Elgaria coerula*), sharp-tailed snake (*Contia tenuis*) and gopher snakes (*Pituophis melanoleucus*).

Landscaped/Non-native

Vegetation This habitat type consists of planted trees and shrubs associated with landscaped areas of developed properties, and of naturalized non-native trees, shrub and herbaceous species that have colonized disturbed areas. Landscaped/non-native vegetation occurs on many creek bank areas that would be occupied by native woody species of the mixed riparian forest (under less disturbed conditions). Typical non-native species include blue gum, coast redwood

(*Sequoia sempervirons*) and elm. Herbaceous non-native species include wild oats (*Avena* sp.), Italian thistle (*Carduus pycnocephalus*), and ripgut grass (*Bromus diandrus*).

Bare banks occasionally occur within landscaped/non-native habitat. These consist of either bare soils or artificial surfaces such as concrete, gabion and gunite.

Wildlife Wildlife that use this habitat along Adobe Creek are habitat generalists and are commonly found in residential areas. Birds observed in this habitat include Western Scrub Jays (*Aphelocoma californica*), Northern Mockingbirds (*Mimus polyglottos*), Mourning Doves (*Zenaida macroura*), and House Finches (*Carpodacus mexicanus*).

Reptiles and amphibians which are expected to occur in this habitat include the California slender salamander (*Batrachoseps attenuatus*), western fence lizard, northern alligator lizard, and southern alligator lizard. Pacific treefrog (*Pseudacris regilla*) and western toad (*Bufo boreas*) were observed.

Riverine

This habitat comprises areas of channel bed and banks located within the ordinary high water level of the channel. Riverine areas carry intermittent seasonal flows of water during the winter and spring rainy season, but are primarily dry (except for occasional areas of dry-season ponding) during the summer and fall. An exception is the Foothill College channel modification site, which supports flow throughout the year due to upstream seeps.

Riverine habitat is present throughout the project site and often occurs beneath the canopies of riparian forest and landscaped/non-native habitats.

Vegetation Riverine habitat comprises primarily non-vegetated channel bottoms and banks; however, areas supporting seasonal, or emergent, wetland vegetation are present on three project sites (Foothill College, Foothill Expressway and Tepa Way). The substrate in riverine areas comprises native soils, gravels or artificial surfaces such as concrete and gunite. Seasonal wetland vegetation consists almost exclusively of watercress (*Rorippa nasturtium-aquaticum*). The amounts and locations of seasonal wetland vegetation within channels changes from year to year depending on conditions within the bed of the stream. Small patches of emergent vegetation, consisting of small-fruited bulrush (*Scirpus microcarpus*) are present at the Foothill College channel modification site.

Wildlife Riverine habitats are valuable to wildlife. Areas of ponding provide breeding habitat for pacific treefrogs and western toads. Ponded water also provides breeding habitat for many insects which in turn attracts bird species such as the Pacific-slope Flycatcher (*Empidonax difficilis*) and the Black Phoebe. The Foothill College channel modification site with its perennial source of water and dense patches of low vegetation, provide the best example of shallow ponded habitat within the project area.

Fisheries Fish are generally absent from intermittent streams due to the lack of water for extended periods of time. Most of Adobe Creek carries intermittent flows, with the exception of the Foothill College area. The only species observed in the project area were threespine sticklebacks (*Gasterosteus aculeatus*) which were observed at the Foothill College channel modification site and California roach (*Hesperoleucus symmetricus*) and Sacramento sucker (*Catostomus occidentalis*) observed downstream of O'Keefe Lane (HRG 1989). Other species, such as resident rainbow trout (*Oncorhynchus mykiss*) may occur upstream of the project area but have not been observed.

Developed Area

Vegetation This habitat type is unvegetated. Developed property along the project alignment consists of several structures, including a swimming pool and tennis court, on the upland area of the Edith Avenue channel modification site. It also includes the parking lot at the Foothill College channel modification site.

Wildlife Use of these areas by wildlife is expected to be insignificant, due to the lack of cover and foraging opportunities observed in the field.

Culvert and Transition Structures

Vegetation These areas are unvegetated concrete structures lining the bed and banks of the channel. Culverts enclose the stream under bridge crossings. Concrete or sacked concrete slope protection transition structures generally line the channel bottoms and extend to the tops of the banks up and downstream of the culverts. (Roadway areas within the project site and adjacent to existing culverts are also included within this category.)

Wildlife Use of these areas by wildlife is expected to be insignificant due to the lack of suitable habitat observed in the field.

Scrub

Vegetation Two relatively small patches of scrub vegetation are present on the upper left bank of the Foothill College channel modification site. The dense vegetation includes coyote brush (*Baccharis pilularis*), poison oak, Himalayan blackberry and coast live oak. Non-native annual grasses occur in canopy openings.

Wildlife Scrub vegetation supports a variety of wildlife species. Reptiles expected to occur prefer dry, scrubby vegetation and include the southern alligator lizard and western fence lizard. Birds from the mixed riparian forest may move through the brushy vegetation for food or nesting material. Anna's Hummingbird (*Calypte anna*), Wrentit, California Quail (*Callipepla californica*), Western Scrub Jay, and Song Sparrow (*Melospiza melodia*) were observed. Orange-crowned Warbler (*Vermivora celata*) is also expected to occur. The black-tailed hare (*Lepus californicus*), deer mouse, and California pocket mouse (*Perognathus californicus*) would also likely occur. Mammalian predators that may hunt in this scrub habitat include the raccoon, striped skunk, gray fox (*Urocyon cinereoargenteus*), and coyote (*Canis latrans*).

SUMMARY SITE DESCRIPTIONS

The two areas that would undergo the greatest physical changes affecting vegetation and wildlife are located at West Edith Avenue (Reach 5) and Foothill College (Reach 11). A brief description of the setting of these two areas and others affected by the proposed project is provided below.

West Edith Avenue Channel Modification Site (Reach 5)

This site is located immediately downstream of the West Edith Avenue crossing (refer to Figure 3). The creek is entirely surrounded by residential properties. The channel banks throughout much of the site are lined with a variety of artificial surfaces including gunite, concrete, or wooden walls. The majority of the channel bottom is also lined with concrete. In some areas, the earthen banks of the creek have eroded behind the wooden walls, effectively widening the channel.

Vegetation The majority of the streamside vegetation, particularly in the upstream portion of the site consists of non-native trees associated with the landscaped properties that abut the creek, particularly large eucalyptus trees. Other non-native trees along the creek include privet and acacia. Large redwood trees are located on the left bank, just outside of the project site. The landscape/naturalized vegetation of the streamside mixed with riparian forest toward the downstream end of the site. The channel bottom and channel banks are primarily unvegetated. However in numerous locations, dense overhanging vegetation such as Himalayan blackberry covers the bank, down to the channel bed.

The upland portion of the project site consists of landscaped/non-native vegetation, and of unvegetated developed areas including a swimming pool and tennis court. The acreages of habitats identified on the site are shown in Table 4.

TABLE 4
WEST EDITH AVENUE CHANNEL MODIFICATION SITE HABITAT ACREAGES

Habitat	**Acres**
Mixed Riparian Forest	0.02
Landscaped/Non-Native	1.15
Riverine	0.25
Developed Area	0.20
Total Site Acreage*	1.37

*Habitats overlap, therefore total site acreage is less than the sum of the individual habitats shown above.

Wildlife The wildlife that use this portion of Adobe Creek are habitat generalists and are common in residential areas. Wildlife species using this site would be exposed to the routine man-made disturbances that are normally associated with residential development. Bird species observed at this site include Western Scrub Jay, Brewer's Blackbird (*Euphagus cyanocephalus*), and House Sparrow (*Passer domesticus*).

Fisheries Few fish are expected in this area due to the lack of water during most of the year. During the rainy season there may be occasional transient fish, such as California roach, threespine stickleback, or Sacramento sucker.

Foothill College Channel Modification Site (Reach 11)

This segment of Adobe Creek flows through the Foothill College Campus, bordered on one side by a parking lot and on the other by a steep hillside which slopes up to El Monte Road. The position of the channel was altered during construction of the parking lot. The site extends from El Monte Road to the bridge across the entrance road to the College. Much of the channel banks and bottom are lined with concrete, gunite and riprap.

Vegetation The upstream half of the site consists primarily of mixed riparian forest. The forest overstory is primarily native, dominated by coast live oak on the upper banks and arroyo and red willows on the mid-to-lower banks. The overstory is moderately dense; however, several canopy openings are vegetated with dense scrub consisting of coyote brush, toyon, poison oak, and Himalayan blackberry.

Naturalized non-native grasses and weeds, and bare soils are located in disturbed areas. Some planted coast live oak, non-native trees and scattered shrubs are also present on the upper banks of these areas, particularly in the downstream portion of the site. A strip of oleanders (*Nerium oleander*) lines the bank top between the upstream end of the parking lot and the exit from the bypass pipe.

Patches of seasonal wetland vegetation occur throughout the site. These patches are particularly dense near the upstream end and in pools near the downstream end.

Several small patches of emergent vegetation, consisting solely of small-fruited bulrush, are scattered throughout the site. The acreages of habitats on the site are shown in Table 5.

TABLE 5
FOOTHILL COLLEGE CHANNEL MODIFICATION SITE HABITAT ACREAGES

Habitat	Acres
Mixed Riparian Forest	0.54
Landscaped/non-native	0.53
Riverine	0.37
Developed Area	0.37
Scrub	0.05
Total Site Acreage*	1.64

*Habitats overlap, therefore total site acreage is less than the sum of the individual habitats shown above.

Wildlife The mixed riparian habitat at this site provides a small corridor of habitat for some riparian and upland species. Bird species observed on the site include Western Scrub Jay, Wrentit, Bushtit (*Psaltriparus minimus*), California Towhee (*Pipilo crissalis*), Song Sparrow, and Lesser Goldfinch (*Carduelis psaltria*). Some mammals that are expected to occur include brush rabbit (*Sylvilagus bachmani*), deer mouse, and striped skunk. Reptiles and amphibians observed at this site include western fence lizard, Pacific treefrog, and western toad. Other expected species include southern and northern alligator lizards, gopher snake, common kingsnake (*Lampropettis getula*), and sharp-tailed snake.

Fisheries Within the limited aquatic habitat at this site, threespine sticklebacks were observed during the surveys. These fish are confined to the vegetated pools, some of which are formed by gunite barriers. Downstream barriers (O'Keefe Lane and downstream of Highway 280) prevent other possible fish species from swimming up to this site. Other species, such as resident rainbow trout, could wash into the site from upstream during flood events.

Culvert Replacement Sites

The project proposes to replace or upgrade six existing culverts at the following roads: El Camino Real (Station 250+95), Yerba Buena Avenue (Station 264+88), Foothill Expressway (Station 377+00), Burke Road (Station 422+30), O'Keefe Lane (Station 491+30) and Tepa Way (Station 559+40). An existing culvert and transition structure occupies the major portion of each culvert replacement site. For sizes of the existing and proposed culverts see the Engineer's Report.

Vegetation Each culvert replacement site is composed either entirely or primarily of culvert and transition structures. The walls of some of the transition structures have dense overhanging vegetation, such as Himalayan blackberry or English ivy. Vegetation on the remaining portion of each site, if present, consists of landscaped/naturalized or mixed riparian forest habitats. Trees and shrubs occur just outside the project boundaries on all sites, with the exception of the downstream end of El Camino Real, which abuts the fully channelized segment of Adobe Creek. Table 6 presents the habitat acreages at the culvert replacement sites.

Riverine habitat on all culvert sites primarily occurs within the existing transition structures and culverts. However, portions of the upstream ends of all six culvert sites and the downstream ends of the O'Keefe Lane and Tepa Way sites consist of native soils and gravels. Relatively small amounts of seasonal wetlands occur within riverine areas on the Foothill Expressway and Tepa Way sites.

Wildlife The expected wildlife use is similar for all of the culvert replacement sites. The use of the culverts is expected to be insignificant, due to the lack of vegetation or other cover. The wildlife use of these sites is mainly confined to small amounts of riparian and other habitats that are on the fringe of these areas. Species that were observed during site visits include the Black Phoebe, the American Robin (*Turdus migratorius*), and the Song Sparrow. Small to medium sized mammals could use culverts to cross under streets.

Fisheries The expected fisheries are similar for all of the culvert replacement sites. No fish are expected in intermittent sections of the stream when it is dry. Threespine stickleback and California roach may be present in the pools at the downstream end of culverts in sections containing water year round.

TABLE 6
CULVERT REPLACEMENT SITES HABITAT ACREAGES

Habitat	El Camino Real (Reach 1, Station 250+95)	Yerba Buena Avenue (Reach 4, Station 364+88)	Foothill Expwy. (Reach 5, Station 377+00)	Burke Road (Reach 7, Station 422+30)	O'Keefe Lane (Reach 9, Station 491+30)	Tepa Way (Reach 13, Station 559+40)	Total
Culverts and transition structures	0.30	0.04	0.11	0.02	0.03	0.03	0.53
Mixed Riparian Forest	0.03	<0.01	0.03	0.00	0.00	0.00	0.06
Riverine	0.15	0.03	0.05	0.02	0.03	0.03	0.31
Landscape/Non-native	0.09	0.01	0.01	0.01	0.02	0.03	0.17
Total Project Area*	0.42	0.05	0.16	0.04	0.07	0.07	0.81

*Habitats overlap, therefore total site acreage is less than the sum of the individual habitats shown above.

Erosion Repair Sites

Seventeen individual proposed bank erosion repair sites are scattered along the creek from El Camino to Tepa Way. Refer to Figure 3 and Table 1 for the approximate location of the erosion repair sites. Table 7 presents a listing of the reach, habitat type, and acreage of the sites. Due to the small sizes of the erosion control sites, the habitat of each site was measured and documented, but not mapped. Each erosion repair site consists of one relatively steep to vertical channel bank and a portion of the adjacent stream bed. Sites range from 20 to 150 feet in length and extend from four to 14 feet up the banks. All sites, except Site 1 (Station 255+00), end below the top of the channel bank. On Site 1, the upper half of the bank would be cut back.

In addition to the seventeen bank erosion repair sites, there are also eight channel stabilization sites. Three of these sites are existing channel bottom stabilizers that would be rebuilt and the other six are new stabilizer locations where the native soil channel is degrading. Vortex rock weirs would be placed at these new locations.

Vegetation The bank erosion repair sites all occur beneath the canopy of mixed riparian forest. The banks within each project site, however, generally support little or no vegetation. An occasional tree or shrub was located directly adjacent to or above these mostly bare soil slopes. On many sites, numerous exposed roots belonging to adjacent trees and shrubs were observed on the banks.

None of the rock weir sites would involve the removal of measurable vegetation.

Riverine habitat within the erosion repair project sites consists of native soils, gravels, large rocks, and concrete debris near the toe of the slope.

TABLE 7
EROSION REPAIR SITES HABITAT ACREAGES

Site Number	Reach (Station)	Mixed Riparian Forest (Square Feet)	Riverine (Square Feet)	Total Area* (Square Feet)
1	1 (255+00)	900	600	900
2	1 (261+00)	240	240	240
3	1 (261+60)	810	630	810
4	1 (263+40)	360	360	360
5	2 (297+00)	1,575	1,275	1,575
6	2 (304+00)	400	240	400
7	2 (307+40)	1,275	1,275	1,275
8	2 (311+30)	1,260	1,120	1,260
9	3 (316+00)	138	50	138
10	3 (323+00)	225	200	225
11	3 (331+00)	360	320	360
12	3 (333+40)	1,020	705	1,020
13	4 (372+00)	250	200	250
14	5 (388+70)	300	250	300
15	8 (464+00)	270	200	270
16	8 (484+40)	180	160	180
17	12 (553+80)	1,080	480	1,080
Total		10,643 (0.24 acres)	8,305 (0.19 acres)	10,643 (0.24 acres)

*Habitats overlap, therefore total site acreage may be less than the sum of the individual habitats shown above.

Wildlife Wildlife use of the bank erosion repair sites is fully described under the preceding wildlife description for existing conditions within Mixed Riparian Forest habitat.

Fisheries Almost all the erosion repair sites lack water for a significant portion of the year. No fish are expected in intermittent sections of the stream when it is dry.

Maintenance Sites

The proposed maintenance program provides for a wide variety of maintenance activities that would occur along the creek. The project includes the construction of five new or upgraded maintenance access ramps. Impacts due to ramp construction at El Camino Real (Station 252+00), West Edith Avenue (Station 395+90), and Foothill College (Station 535+90) are included with those sites' impact analyses. The existing ramps at Alta Mesa Cemetery and Raquel Court are currently dirt roads with some grasses that would be replaced with crushed rock. No significant biotic impacts are anticipated.

The other main types of maintenance include removing vegetation that obstructs flow, maintaining structures within the channel, controlling bank erosion, removing sediments that severely constrict channel capacity, and removing debris that obstructs the channel. Maintenance activities could occur virtually anywhere along the channel; however, the existing conditions discussion below is limited to those areas in which it is most likely that maintenance activities would have a measurable effect on biotic resources. It is assumed that the habitats of future erosion repair sites (which averages six new sites every five years) would be similar to that of the seventeen erosion repair sites described in the previous section.

Vegetation In general, vegetation removal along Adobe Creek has been relatively limited due to poor access and lack of maintenance easements. In many areas canopy shading limits growth of vegetation along the channel bottom. Areas in which routine removal of vegetation has occurred during the past 5-10 years are the Foothill College channel modification site, upstream to the bypass inlet, and from O'Keefe Road to Foothill Expressway. These are the areas in which vegetation removal is most likely to occur in the future.

The maintenance areas are within the channel and are vegetated primarily with Himalayan blackberry. This species grows relatively rapidly and overhangs the channel in many locations. Cattails (*Typha* sp.) are periodically removed from the pool at the lower end of the Foothill College channel modification site as well. Willow stands that have been cut from the Foothill College channel modification site in the past are not considered part of future maintenance areas for the project since the construction of the channel modifications would eliminate all existing vegetation in that portion of the channel.

Wildlife The cattails support habitat for the pacific treefrog and western toad. Some bird species such as the Red-winged Blackbird (*Agelaius phoeniceus*), Lesser Goldfinch, and Song Sparrow are expected in this area. Reptiles expected to use the blackberry patches include western fence lizards, southern and northern alligator lizards, gopher snakes, common kingsnakes and sharp-tailed snakes. Mammalian species expected to use these patches include Virginia opossum (*Didelphis virginiana*), raccoon and California ground squirrel.

Fisheries The limited aquatic habitat at these maintenance sites may support threespine sticklebacks and California roach. These fish would generally be confined to the vegetated pools.

SPECIAL STATUS PLANT AND WILDLIFE SPECIES

Information concerning threatened, endangered, or other special status species that may occur in the area was collected from the following sources: the California Department of Fish and Game's Natural Diversity Data Base, Rarefind (CNDDB 1994), the Santa Clara County Natural Resources Sensitivity Areas Base Maps (H. T. Harvey and Associates 1980), the Adobe Creek Restoration Plan (Habitat Restoration Group 1989), California Wildlife Habitat Relationships species notes (CDFG 1988, 1990a, 1990b), and miscellaneous information available through the U. S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and technical publications. The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 1994) supplied information regarding the distribution and typical habitats of vascular plants in the vicinity.

Special Status Species Regulations Overview

Several plant and animal species known to occur in the vicinity of the project site have been given special status under federal or state endangered species legislation, or have otherwise been designated as sensitive by state resource agencies or organizations such as the California Native Plant Society. Such species are referred to collectively as "species of special status".

Federally-listed threatened and endangered species and their habitats are protected under the federal Endangered Species Act (FESA). A "take" as defined under FESA includes activities such as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." Harm has been defined by USFWS's regulations to include some types of "significant habitat modification or degradation."[5] Activities which may result in "take" of individuals are regulated by the USFWS. The USFWS produced an updated list of candidate species February 28, 1996 (Federal Register: Volume 61, Number 40, 50 CFR Part 17). In addition, the USFWS discontinued the designation of Category 2 and Category 3 species. Candidate species are now species regarded by USFWS as candidates for addition to the "List of Endangered and Threatened Wildlife and Plants". Candidate species are not afforded any legal protection under FESA. However, candidate species receive special attention from Federal and State agencies during the environmental review process.

State listed rare, threatened and endangered species are protected under provisions of California's Endangered Species Act (CESA). Activities which may result in "take" of individuals are regulated by the California Department of Fish and Game (CDFG). Habitat degradation or modification is not included in the definition of "take" under CESA. The CDFG has interpreted "take" to include the "killing of a member of a species which is the proximate result of habitat modification ...".[6]

The CDFG has also produced three lists of "species of special concern" which serve as "watch lists". Species on these lists are either of limited distribution or the extent of their habitats has been reduced substantially, such that their populations may be threatened and should be monitored. These species, however, do not receive statutory protection.

---

[5] The U.S. Supreme Court ruled on June 29, 1995 that "harm" may include habitat modification "...where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

[6] Letter from Craig Manson, General Counsel, CDFG, to Mr. Anthony De Vigo, Deputy Attorney General, Department of Justice, dated July 18, 1994.

Vascular plants listed as rare or endangered by the California Native Plant Society have no designated status under state endangered species legislation, but are considered for the purposes of environmental review. They are defined as follows:

List 1B:	Plants rare, threatened, or endangered in California and elsewhere.
List 2:	Plants rare, threatened, or endangered in California, but more numerous elsewhere.
List 3:	Plants which need more information, i.e., a review list.
List 4:	Plants of limited distribution, i.e., a watch list.

Special Status Plant Species

The distributions and habitats of all special status plant species known to occur in Santa Clara County were examined during the biological investigation. All of the special status species reported in the vicinity occur in habitat types that are not present within the project area, which include mixed riparian forest, riverine, landscaped/non-native, and developed areas. Therefore, no special status plant species are expected to occur within the project area.

Special Status Animal Species

Table 8 lists relevant special status wildlife species, their status, and the likelihood of their occurrence within the project site. No suitable habitat exists on the site to support chinook salmon (*Oncorhynchus tshawytscha*) or foothill yellow-legged frog (*Rana boylii*). It is likely that marginal habitat exists to support steelhead trout (*Oncorhynchus mykiss*).

Other possible special status wildlife species in the area could include rare to occasional transients, migrants, and foragers. These include the California red-legged frog (*Rana aurora draytonii*), western pond turtle (*Clemmys marmorata*), White-tailed Kite (*Elanus caeruleus*), Sharp-shinned Hawk (*Accipiter striatus*), Cooper's Hawk (*Accipiter cooperii*), Long-eared Owl (*Asio* otus), Willow Flycatcher (*Empidonax traillii*), Bank Swallow (*Riparia riparia*), Vaux's Swift (*Chaetura vauxi*), Tricolored Blackbird (*Agelaius tricolor*), Yellow-breasted Chat (*Icteria virens*), Townsend's big-eared bat (*Plecotus townsendii*), pallid bat (*Antrozous pallidus*), and California mastiff bat (*Eumops perotis californicus*). These species are not expected to rely on the project sites, to be present for a significant amount of time, or to breed on site.

The California Yellow Warbler (*Dendroica petechia brewsteri*) and ringtail (*Bassariscus astutus*) may breed or be resident on site.

Expanded descriptions are provided below for those species which meet the following criteria: 1) potentially suitable breeding habitat occurs on the project site, 2) surveys were conducted (fish, reptiles, amphibians), or 3) the resources agencies have expressed particular concern.

TABLE 8
SPECIAL STATUS SPECIES THAT COULD OCCUR AT ADOBE CREEK

Common Name ***Scientific Name***	**Status**	**Habitat**	**Potential for Occurrence**
Animals			
State or Federally Endangered or Threatened; or Proposed for State or Federal Status			
California Red-legged Frog *Rana aurora draytonii*	FT, CSC	Inhabits quiet pools of stream marshes and ponds, often with overhanging vegetation	No suitable habitat for most of Adobe Creek due to the intermittent nature of the creek and lack of deep pools. Rarely a frog may be washed into the Foothill College site
Steelhead Trout *Oncorhynchus mykiss*	FT, CSC	Found only in rivers, creeks, and streams that reach the ocean, they require presence of shallow, partly shaded pools, riffles, and runs with water temperatures <70°F for juveniles and adults and <58°F for developing embryos	It is likely that suitable habitat on the sites exists. Status unknown Historically inhabited area prior to urbanization
Willow Flycatcher *Empidonax traillii*	CE	Willow thickets associates with riparian habitats and montane meadows	This occasional migrant through the area is found in riparian habitats, especially willows; occurrence at any of the study sites would be incidental.
Bank Swallow *Riparia riparia*	CT	Requires steep stream or riverbanks with fine-textured or sand soils for nest digging, forages over many wetland habitats	Rare migrant found over wetland habitats, occurrence at any of the study sites would be incidental
Federal Candidate Species, State Protected, and/or California Species of Special Concern			
~~Steelhead Trout~~ ~~*Oncorhynchus mykiss*~~	~~CSC~~	~~Found only in rivers, creeks and streams that reach the ocean; they require presence of shallow, partly shaded pools, riffles, and runs with water temperatures <70°F for juveniles and adults and <58°F for developing embryos.~~	~~It is likely that suitable habitat on the sites exists Status unknown Historically inhabited area prior to urbanization~~
Chinook Salmon *Oncorhynchus tshawytscha*	CSC	Found only in rivers, creeks, and streams that reach the ocean, they require presence of shallow, partly shaded pools, riffles, and runs with water temperatures <70°F for juveniles and adults and <58°F for developing embryos	No suitable habitat on any of the sites due to downstream barriers and the lack of water for several months of the year.
Foothill Yellow-legged Frog *Rana boylii*	CSC	Inhabits rocky streams in a variety of wooded habitats	Historically inhabited area prior to urbanization. Now is absent from urban creeks such as Adobe.
Western Pond Turtle *Clemmys marmorata*	CSC	Associated with permanent, or intermittent, water and ponds in a wide variety of habitats	Rare to occasional transient in winter. Sites lack water for several months of the year
Sharp-shinned Hawk *Accipiter striatus*	CSC	Very local breeder, primarily at higher elevations, common migrant and winter visitor throughout the region in all habitats	This common migrant and winter visitor could forage along any of the study drainages.
Cooper's Hawk *Accipiter cooperii*	CSC	Breeds in most of the wooded habitats found in the state; uses many habitats in winter	This species could forage along any of the study areas during the winter and migration. Human disturbance in the project area is too high for appropriate breeding habitat.
Long-eared Owl *Asio otus*	CSC	Primarily in riparian habitats, also in dense live oak thickets mixed conifer forests, and other dense stands of trees	Although this very rare species in Santa Clara County could occur along the more densely wooded portions of Adobe Creek, its occurrence at any of the study sites is expected to be incidental at best.
Vaux's Swift *Chaetura vauxi*	CSC	Coniferous forests, especially with snags with tall burned-out stubs	Likely forager over any of the study areas during summer and migration. Breeds nearby in the Santa Cruz Mountains.
White-tailed Kite *Elanus caeruleus*	SP	Found in a variety of open habitats including grasslands and marshes	Likely forager in open areas in the vicinity of the creek Likely to use trees along the creek for perching and roosting.
Purple Martin *Progne subis*	CSC	Inhabits open forests, woodlands, and riparian habitats during breeding season	This uncommon migrant may forage over some of the study site. It is scarce in the region
California Yellow Warbler *Dendroica petechia brewsteri*	CSC	Breeds in riparian woodlands from coastal and desert low-lands up to 8000 ft in the Sierra Nevada, also in montane chaparral and open ponderosa pine and mixed conifer forests	A common transient in riparian habitats during migration, potential breeding habitat is present at those study sites where riparian forest is present

TABLE 8
SPECIAL STATUS SPECIES THAT COULD OCCUR AT ADOBE CREEK

Common Name ***Scientific Name***	**Status**	**Habitat**	**Potential for Occurrence**
Yellow-breasted Chat *Icteria virens*	CSC	Breeds in valley-foothill riparian up to about 4800 ft, and up to 6500 ft in desert riparian habitats east of the Sierra Nevada. Breeds primarily in Southern parts of Santa Clara County, Rare in north.	Though this very rare migrant in Northern Santa Clara County could occur along the more densely wooded portion of Adobe Creek, its occurrence at any of the study sites is expected to be incidental.
Tricolored Blackbird *Agelaius tricolor*	CSC	Breeds near fresh water, preferably in emergent vegetation of tall dense cattails or tules, but also in thickets of blackberries or willows forages in grassland and croplands	Uncommon resident of Santa Clara County; appropriate breeding and foraging habitat is absent from all of the study sites, but may rarely occur.
Townsend's Big-eared Bat *Plecotus townsendii*	CSC	Found in all habitats except alpine and sub-alpine; most abundant in mesic habitats	This species is an uncommon resident that could forage above any of the sites. None of the sites offer more than marginal roosting habitat.
California Mastiff Bat *Eumops perotis californicus*	CSC	Occurs in arid to semi-arid terrain; requires steep cliffs or rock outcroppings for roosting	Occurs very rarely in Santa Clara County. Prefers habitat that is drier than any of the study sites, so presence is unlikely.
Pallid Bat *Antrozous pallidus*	CSC	Occurs in a variety of habitats, including grasslands, shrublands, woodlands, and forests; most common in dry open habitats with rock areas for roosting	This species is an uncommon resident that could forage above any of the sites. None of the sites offer more than marginal roosting habitat.
Ringtail *Bassariscus astutus*	SP	Occurs in riparian habitats, and in brush stands of most foremost and shrub habitats, at low to middle elevations.	Suitable habitat is present along the upper reaches of Adobe Creek.

Status Codes:
FE = Federally Endangered
FT = Federally Threatened
FPE = Federally Proposed Endangered
FC = Federal Candidate

CE = California Endangered
CT = California Threatened
CSC = California Species of Special Concern
SP = Fully protected species in the state of California

State or Federal Endangered or Threatened Species, or Proposed for State or Federal Status

California Red-legged Frog (*Rana aurora draytonii*) Federal listing status: Threatened; State listing status: Species of Special Concern The California red-legged frog is a medium-sized frog with reddish-colored legs. This species is generally restricted to riparian habitats in California and northern Baja California. Red-legged frogs prefer deep, quiet pools (greater than 2-3 feet deep) in creeks, rivers, or lakes below 1,000 meters in elevation (about 3,000 feet). Habitat requirements include fresh emergent or dense riparian vegetation, especially willows adjacent to shorelines. Red-legged frogs can survive in seasonal bodies of water that are dry for short periods if there is a permanent water body or dense vegetation nearby. The adults are normally active at night and breed in ponds within creeks or marshes during the late winter or early spring after waters recede. Females attach eggs in a single cluster to a vegetation brace just under the surface of the water. The eggs hatch in just over a week and the resulting larvae feed on plant and animal material on the bottom of the pond. It takes at least 4 months for the larvae to metamorphose into juvenile frogs.

The California red-legged frog is probably present upstream from the Foothill College channel modification site in isolated tributaries, ponds, or springs as there are known records from this part of Santa Clara County. An occasional frog may be washed into the Foothill College channel modification site during winter or spring storm events. However, such storm-washed frogs are not expected to survive in the project reach because of inadequate habitat for this species.

California Species of Special Concern, State Protected, or Federal Candidate Species

Steelhead Trout (*Oncorhynchus mykiss*) Federal listing status: threatened; State listing status: Species of Special Concern Steelhead trout are an anadromous (i.e., migrates upstream from a lake or ocean to spawn) form of rainbow trout. Young steelhead usually remain in the freshwater streams about one to two seasons before migrating to the ocean. They typically grow rapidly for one to two seasons while in the ocean, before returning to freshwater streams to spawn. Steelhead do not necessarily die after spawning, as do salmon, and may survive to spawn two to three seasons. Steelhead trout generally prefer clear, cool, perennial sections of relatively undisturbed streams which support a dense canopy cover, but are free of rooted or aquatic vegetation. Gravel substrates are the preferred spawning habitat for these trout. Steelhead trout usually survive in pools or streams with water temperatures less than 70 degrees Fahrenheit (F) for juveniles and adults and less than 58 degrees F for developing embryos.

Steelhead trout have not been observed at any of the channel modification sites. Resident rainbow trout are probably present in some isolated tributaries upstream of the Foothill College channel modification site and an occasional fish may be washed into this area during storm events. However the habitat here is marginal for trout because of the lack of both deep pools and cool water temperatures during the summer and early fall.

Chinook Salmon (*Oncorhynchus tshawytscha*) Federal listing status: none; State listing status: Species of Special Concern The Chinook salmon is an anadromous fish that migrates upstream in the fall. The majority of chinook salmon mature (in the ocean) when three or four years of age. These salmon then migrate upstream to spawn in cool streams with a gravely bottom. All adult chinook salmon die after spawning. Young chinook salmon usually migrate to sea at about four months of age and generally under 4 inches long. Chinook salmon generally prefer clear, cool, perennial sections of relatively undisturbed streams which support a dense canopy cover, but are free of rooted or aquatic vegetation. Gravels are the preferred spawning habitat for these salmon. Chinook salmon usually survive in pools or streams with water temperatures less than 70 degrees F for juveniles and adults and less than 56 degrees F for developing embryos. Chinook salmon are not present at any of the sites because of the lack of suitable habitat.

Foothill Yellow-legged Frog (*Rana boylii*) Federal listing status: None; State listing status: Species of Special Concern The foothill yellow-legged frog is a relatively small (1.3-3 inch length) frog with yellowish colored legs. These frogs are restricted to riparian habitats in California and western Oregon. The best habitats for these frogs are small to medium sized perennial streams that have rocky substrates and patchy vegetative cover. The juveniles and adults are normally active during the day.

Yellow-legged frogs generally breed in the still water edges of pools in creeks during the early spring after waters recede from heavy winter storms. Females attach their eggs in a single cluster to the edge of a rock or stone under the surface of the water. The eggs hatch in just over a week and the resulting larvae filter feed on plant and animal material. It takes at least four months for the larvae to metamorphose into juvenile frogs.

Juvenile frogs are highly predacious. Adults normally reach sexual maturity in two to three years after metamorphosis. These frogs are essentially active throughout the year at elevations below 2,500 feet, although they probably estivate in vegetation thickets during flood events or cold weather (they definitely hibernate at elevations above 2,500 feet in the Sierra Nevada foothills). They have disappeared from virtually all of southern California and a significant part of the remainder of their historic range due to habitat loss from agriculture and urbanization and the introduction of non-native aquatic predators (e.g., fishes and bullfrogs).

Foothill yellow-legged frogs may have historically inhabited Adobe Creek before development during the twentieth century. However, there are no known records of this frog for this area of Santa Clara County. The closest known records are from the region west of Stanford University (all collected around the turn of the century). Based on this evidence, foothill yellow-legged frogs do not inhabit the project area.

Western Pond Turtle (*Clemmys marmorata*) (including the Southwestern Pond Turtle ssp. *pallida*) Federal listing status: None; State listing status: Species of Special Concern The western pond turtle is a medium-sized brown or olive-colored aquatic turtle, and is found west of the Sacramento-San Joaquin Delta, and south to northern Baja, except in desert areas. The pond turtle is normally found in and along riparian areas, although gravid females have been reported up to a mile away from water in search of appropriate nest sites. The preferred habitat for these turtles includes ponds or slow-moving water with numerous basking sites (logs, rocks, etc.), food sources (plants, aquatic invertebrates, and carrion), and few predators (raccoons, introduced fishes, and bullfrogs). Juvenile and adult turtles are commonly seen basking in the sun at appropriate sites, although they are extremely wary animals and often dive into the water at any perception of danger.

Western pond turtles probably move through many of the channel modification sites from the late spring though the fall months. Habitat is greatly limited due to the lack of water for much of the year. Western pond turtles have been known to move great distances (several kilometers) during the year to get from aquatic habitat to aquatic habitat (Jennings and Hayes 1994). Most turtles are probably present in the headwater tributaries of Adobe Creek which are above the project area.

California Yellow Warbler (*Dendroica petechia brewsteri*) Federal listing status: None; State listing status: Species of Special Concern Numbers of breeding pairs of California Yellow Warblers have declined dramatically in many lowland areas to such an extent that the species has been designated a Species of Special Concern by CDFG. The male Yellow Warbler is brilliant yellow with reddish-brown vertical streaking on the breast. This insectivore is found primarily in deciduous riparian habitats comprised of alders, cottonwoods, willows, and other small trees and shrubs. The Yellow Warbler feeds on spiders and insects, as well as a few berries. This warbler builds a compact nest of weed stalks, shredded bark and grass high up in a deciduous sapling or shrub. Yellow Warblers migrate mostly to Mexico and South America in the fall and return to California to breed in April. Some birds overwinter in southern California lowlands. The Yellow Warbler (including subspecies other than *brewsteri*) is expected to be a common transient in the riparian habitats during migration. However, potential breeding habitat exists in the mixed riparian woodland habitats on site.

Ringtail (*Bassariscus astutus*) Federal listing status: None; State listing status: Fully Protected, CDFG Code 4700 Ringtails are a close relative of the raccoon. This species inhabits cavities in rock outcrops, talus slopes, and hollows in trees, logs and snags. Ringtails are usually not found more than 0.8 km from permanent water. This secretive carnivore is nocturnal and feeds primarily on rodents and rabbits and less frequently on birds, reptiles, invertebrates, fruit, nuts, and some carrion. No ringtails were observed during any of the field surveys, but they may occur within the riparian habitats on site.

REGULATED HABITATS

Habitats under U. S. Army Corps of Engineers and California Department of Fish and Game Jurisdiction

Drainage channels are considered to be Waters of the United States. These waters are subject to the jurisdiction of the U. S. Army Corps of Engineers (Corps) according to provisions of the Section 404 of the Clean Water Act. Jurisdictional drainages include any incised channels which may carry a permanent, intermittent, or ephemeral flow of water. The Corps has jurisdiction over that portion of each channel defined by the high tide line or ordinary high water (OHW) marks on opposing channel banks.

Wetlands are also considered to be Waters of the United States. Wetlands are identified by the presence of hydrophytic vegetation, hydric soils, and wetland hydrology, according to methodologies outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1987 version).

The California Department of Fish and Game (CDFG) regulates any activities which would "divert, obstruct, or change the natural flow or bed channel or bank of any river, stream or lake ... in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit" under Sections 1601 and 1603 of the California Fish and Game Code (CDFG, 1991). Such activities may be permitted within state waters, but mitigation may be stipulated according to terms of a Streambed Alteration Agreement which must be obtained from CDFG prior to commencement of work.

H. T. Harvey and Associates surveyed the entire project area in 1993 to identify Corps jurisdictional waters (including tributary waters and wetlands) and delineate their boundaries. The results of this investigation were verified by the Corps in 1994. Tributary waters were identified at all locations along the project alignment. Wetland areas were identified within the tributary waters at the Foothill College channel modification site, West Edith Avenue channel modification site, Foothill Expressway culvert addition site, Burke Road culvert replacement site, and Tepa Way culvert replacement site. The total amount of jurisdictional waters present is listed in Table 9.

All or a portion of the major modification sites are also subject to the jurisdiction of the CDFG. The area of each site subject to CDFG jurisdiction, determined in the field in 1994, is also listed in Table 9.

Tree Ordinances

The Town of Los Altos Hills and the City of Los Altos both have tree ordinances. Los Altos Hills requires a permit to remove or destroy any trees designated as Heritage Oaks or Heritage Trees. Heritage Oaks measure 12 inches or greater in diameter at breast height. Heritage trees are designated by the City Council. The Town seeks to preserve or protect existing trees, especially Heritage Oaks and Heritage Trees, on lands to be developed by placing conditions on development approvals. The City of Los Altos requires a permit to remove or destroy any protected trees. Protected trees include Heritage Trees, any trees on property zoned other than R1, any tree on property to be developed, and any oak, coast redwood, California sycamore or California bay tree 48 inches or greater in circumference. Planting of replacement trees may be required as a condition of permit approval. It is estimated that the project area contains 10 coast live oak trees meeting the tree ordinances of both municipalities. The City of Palo Alto has a tree ordinance (Ordinance No. 4362), that protects Coast Live Oak and Valley Oak trees that are 11½ inches or more in diameter at 4½ feet above natural grade.

2. IMPACTS

Implementation of the project would have potentially adverse effects on the area's biological resources. CEQA provides guidance in evaluating project impacts and determining significance. According to Appendix G of CEQA, a project's effects on biotic resources will be considered significant if the project would:

- substantially affect a candidate or listed rare, threatened, or endangered species of animal or plant or the habitat of the species;
- interfere substantially with the movement of any resident or migratory fish or wildlife species; or
- substantially diminish habitat for fish, wildlife, or plants; or
- conflict with adopted local environmental plans and goals of the community where the project is located.

TABLE 9
CORPS AND CDFG JURISDICTIONAL ACREAGES

Site	Reach (Station #)	Corps Area Tributary Waters		Corps Area Wetlands within Tributary Waters		CDFG Area	
		Sq Ft	Acres	Sq Ft	Acres	Sq Ft	Acres
Channel Modification Sites:							
West Edith Ave.	5	10,800	0.25	84	<0.01	21,200	0.49
Foothill College	11	16,250	0.37	3,298	0.08	34,090	0.78
Culvert Replacement Sites:							
El Camino Real	1 (250+95)	6,723	0.15	0	0	18,685	0.43
Yerba Buena Ave.	4 (264+88)	1,160	0.03	0	0	1,650	0.04
Foothill Expwy.	5 (377+00)	1,993	0.05	150	<0.01	3,395	0.08
Burke Road	7 (422+30)	840	0.02	165	<0.01	1,538	0.04
O'Keefe Lane	9 (491+30)	1,460	0.03	0	0	2,850	0.07
Tepa Way	13 (559+40)	1,130	0.02	264	0.01	2,760	0.06
Erosion Repair Sites:							
1	1 (255+00)	600	0.01	0	0	900	0.02
2	1 (261+00)	240	0.01	0	0	240	0.01
3	1 (261+60)	630	0.01	0	0	810	0.02
4	1 (263+40)	360	0.01	0	0	360	0.01
5	2 (297+00)	1,275	0.03	0	0	1,575	0.04
6	2 (304+00)	240	0.01	0	0	400	0.01
7	2 (307+40)	1,275	0.03	0	0	1,275	0.03
8	2 (311+30)	1,120	0.03	0	0	1,260	0.03
9	3 (316+00)	50	<0.01	0	0	138	<0.01
10	3 (323+00)	200	<0.01	0	0	225	0.01
11	3 (331+00)	320	0.01	0	0	360	0.01
12	3 (333+40)	765	0.02	40	<0.01	1,020	0.02
13	4 (372+00)	200	<0.01	0	0	250	0.01
14	5 (388+20)	250	0.01	0	0	300	0.01
15	8 (484+00)	240	0.01	0	0	270	0.01
16	8 (484+40)	160	<0.01	0	0	180	<0.01
17	12 (553+80)	480	0.01	0	0	1,080	0.02
Total		48,761 sq. ft.	1.1 acres	4,001 sq. ft.	0.09 acres	96,811 sq. ft.	2.2 acres

A project's effects will also be considered if the project would:

- directly affect species protected under provisions of the Migratory Bird Treaty Act (e.g., burrowing owls or nesting raptors); or
- result in an impact of greater than one acre of sensitive habitat (e.g., wetlands, riparian areas, oak woodland, serpentine grassland); or
- result in the removal of native (e.g., coast live oak) heritage sized trees that are locally significant.

IMPACT ASSESSMENT METHODOLOGY

This section describes the assumptions and methods employed to evaluate impacts on the biological resources resulting from implementation of the proposed project. Impacts to wildlife species are assumed to be directly correlated with the loss or alteration of plant and aquatic communities which provide their primary habitat. These losses could result from vegetation removal, site grading, installation of artificial surfaces, or direct wildlife loss or disturbance resulting from construction activities.

The existing conditions section described the habitat types (e.g. riverine, mixed riparian forest, etc.) of the project area and thereby characterized the biotic resources of the project sites. However, this Impact Assessment section is primarily geared towards precisely quantifying impacts such that mitigation ratios can be applied. A system of categorizing impacts which allows for accurate quantification of impacts and clear application of mitigation ratios is described below. The Existing Conditions habitat descriptions should be read as a general prelude to the Impacts and Mitigation sections.

Vegetation

All significant vegetation impacts were quantified during the biological investigations. However, due to the complex mosaic of habitats it was often difficult to clearly delineate a border between the habitat types on the project site. In addition, in many areas several habitats coexist, with one occurring beneath the canopy of another. Due to these complexities, impacts were assessed based on the three habitat quality categories described below. This methodology ensures that, regardless of the type of habitat impacted, its relative value is taken into account in quantifying impacts. As a result, the impact quantities are not provided by habitat type, but rather by habitat quality category.

The habitat quality categories were based on observed vegetation characteristics that correspond to fish and wildlife habitat values. All vegetated and bare soil areas were measured and assessed for habitat quality. Habitat quality categories were based on the presence/absence and the density of the overstory vegetation, the presence or absence of native species, and the complexity of vegetation structure (e.g. presence of tree, shrub and herbaceous layers). The three habitat quality categories are:

> **High quality**: Native overstory with continuous understory or occurring in dense thickets; dense native overstory with sparse, non-native or no understory; and native willow thicket.

Medium quality: Sparse native overstory with sparse, non-native or no understory, non-native overstory with native understory, and dense non-native overstory with sparse, non-native or no understory.

Lower quality: Sparse non-native overstory with sparse, non-native or no understory, native hydrophytic vegetation dominated by tule/cattail.[7] In addition, any areas *not* included in medium or high quality categories that would be covered with riprap, gabions, etc.

The number, type, and size (diameter-at-breast-height) of trees impacted were also recorded. If several trunks of a single tree occurred at breast height, each trunk was counted separately.

Surveys also assessed loss of vegetation that provides shading of the creek. It is understood that vegetation along the creek bed and banks could be considered critical to reducing stream temperatures and providing food and shelter for known resident species of fish. Loss of creek shading for each project area was estimated by measuring the linear feet of tree canopy within 20 feet of the channel bed that would be lost due to project implementation. In many cases vegetation providing shading may be lost in a portion of this zone but remaining vegetation would continue to provide significant amounts of channel shading.

Wildlife

Wildlife biologists surveyed the project sites, upstream and downstream areas, and adjacent uplands for general wildlife habitat and species occurrence, special status species presence and raptor nesting locations. In general, loss of significant vegetation that provided cover, breeding and foraging habitat was considered a significant impact to wildlife.

The project design team of District engineers and consulting biologists went through several revisions of project design and biotic analysis. At each project redesign, the biotic impacts were reduced and opportunities for reestablishing habitat within the construction zones were increased. Project design details are included in the Engineer's Report. Some of the more notable redesign features are listed below:

1) At the West Edith Avenue channel modification site, excavation of the left bank was avoided to preserve significant existing trees and a mid-bank soil bench was created to allow for revegetation close to the reconstructed low-flow channel.

2) At the Foothill College channel modification site, excavation into the left bank was minimized to preserve existing vegetation and mid-bank soil benches were created to allow for revegetation close to the reconstructed low-flow channel.

3) All of the bank erosion repair sites were redesigned to lower the height of riprap placement on the creek bank and to minimize excavation of slopes above the riprap.

---

[7] Native hydrophytic vegetation is included in this category. While this type of vegetation is of high value, it is generally mitigated at a lower ratio, since it establishes relatively quickly.

4) All new proposed channel grade stabilizers were changed from riprap subterranean walls into "fish friendly" boulder vortex weirs that create a resting pool for fish and allow for fish passage.

5) All drop structures were assessed by an aquatic biologist and redesigned to facilitate fish passage.

EFFECTS FOUND TO BE LESS THAN SIGNIFICANT

The biological resources listed below are considered sufficiently abundant in the region so that project impacts, when considered in the context of this project alone, would be less than significant. These biotic resources are otherwise unprotected by local, state, and federal laws.

Loss of Habitat for Various Special-Status Plant and Animal Species

On the basis of field work conducted for this EIR, it has been determined that no special-status plants presently occur on-site. However, several special-status animal species have been identified as historically or currently occurring in the project vicinity. Impacts to those species are less than significant as described below. The California red-legged frog is treated separately in the next section.

Additionally, the project site does not support suitable habitat for the chinook salmon and foothill yellow-legged frog. Although steelhead may be able to move into the project area, steelhead habitat on site is marginal at best, and the presence of the species is considered unlikely. Adobe Creek is a highly disturbed stream subject to intermittent flows and lacking deep pools. In the summer and early fall, the majority of the project area is dry. Some shallow (less than 2' deep) pools remain in the Foothill College project site through the summer and fall but are considered very marginal for steelhead. Furthermore, project work will be conducted in the dry season when steelhead would not be present. Therefore, project implementation would result in a less-than-significant impact upon these species.

Some special-status terrestrial vertebrates use the site only as occasional visitors, migrants, or transients. These species include the Willow Flycatcher, Bank Swallow, Long-eared Owl, Yellow-breasted Chat, Tricolored Blackbird, Townsend's big-eared bat, pallid bat, and California mastiff bat. Several other special-status species are expected to forage on-site including the White-tailed Kite, Sharp-shinned Hawk, Cooper's Hawk, and Vaux's Swift. The proposed project would have no effect on the breeding success of any of these species, although it may result in a small reduction of foraging habitat available to them regionally. The small reduction in foraging habitat for these species is considered a less-than-significant impact. In addition, the project impacts to riparian vegetation that comprise the foraging habitat will be mitigated to a less-than-significant level.

The western pond turtle may occasionally be found along Adobe Creek within the project reaches. Adequate habitat occurs upstream from the project. Western pond turtles are known to move up and down drainages. However, project-related impacts to the turtle are expected to be less than significant due to the minor loss of suitable habitat and the overall very poor quality of the habitat.

The California Yellow Warbler is a possible transient during migration and may breed in the riparian habitats on-site. The project sites represent a small fraction of the available breeding habitat for this species regionally. Thus, project implementation would constitute a less-than-significant impact on breeding and foraging habitat for the California Yellow Warbler.

The ringtail may occasionally occur in the riparian habitats along Adobe Creek. This species is a common inhabitant of wooded and riparian habitats in the county. Prime habitat may occur upstream but ringtails are uncommon in the residential sections of the county stream corridors. Therefore, the relatively small losses of this type of habitat due to project implementation would result in a less-than-significant impact.

Loss of or Degradation of Habitat, or Increased Mortality, for the California Red-legged Frog

The California red-legged frog is probably present upstream from the Foothill College channel modification site in isolated tributaries, ponds, or springs. An occasional frog may be washed into the Foothill College channel modification site during winter or spring storm events. However, such frogs are not expected to survive in the project reach because of inadequate habitat for this species.

While it is possible that red-legged frogs may rarely be washed into the project area, the implementation of the proposed channel modifications, erosion repair, and maintenance measures would not significantly affect the species. Construction would occur in the dry season, so any animal washed into the area during the previous winter is not likely to survive.

Although it is considered highly unlikely that frogs would be present, preconstruction surveys will be performed at the Foothill College site. As part of the Corps permit processing procedures, the Corps will consult with USFWS (Section 7, Endangered Species Act) to determine impacts to, and management of, red-legged frogs associated with this project.

Loss or Reduction in Quality of Fisheries Habitat

The creek supports only intermittent flow in most areas and is dry most of the year, although Foothill College usually has water all year. In addition, the creek lacks deep, perennial pools and has numerous in-stream barriers to fish movement. Thus, the fisheries resources of the creek are extremely limited, thereby reducing the potential for significant impacts to occur. Limited loss of fish during project construction is expected to occur since construction would take place during periods of low flow. Likewise, effects on stream temperatures are not considered a relevant issue for resident fish in the project area. Nevertheless the project includes mitigation for any loss of channel shading that could increase stream temperatures.

The project would result in the loss of some trees that provide some of the channel shading along an estimated 1,975 linear feet of the creek channel. However, at all of the sites, vegetation to be left intact would continue to provide some channel shading, and therefore, total shading loss would not occur along this length. The proposed design provides for reestablishment of more than 1,900 linear feet of plantings on the creek banks at both channel modification sites, which is where the most significant tree removal along the channel would occur. These plantings are mostly within 10-15 feet of the creek channel and, as the trees mature, will provide significant channel shading. There would be a temporal loss of some channel shading until the vegetation along the channels is reestablished; however, in light of known fish species present on the creek no significant impact is anticipated due to loss of channel shading.

The project would eliminate some undercut pools next to gunite or concrete channel segments at Foothill College and West Edith Avenue that provide shelter to fish. This would result in some fisheries habitat loss. However, these gunite and concrete channel segments are currently either impassable or partly impassable to fish. H. T. Harvey and Associates' aquatic biologist assisted the District in developing drop structures that are passable to fish at both the Foothill College and Edith Avenue sites. The current channel modification site designs would replace the impassable and partly impassable segments with structures that are passable, and therefore, would result in a net gain in fisheries habitat value in those areas where small undercut pools would be lost. Design details for all drop structures are included in the Engineer's Report.

In summary, no significant impacts to fisheries habitat are anticipated, based on the above discussion.

Barriers to Fish Passage

The project will install structures and reconfigure the creek channel in a number of locations that currently have barriers that preclude most fish from moving upstream. The barriers include steep, long gunite drops and culverts with impassable downstream or upstream transitions. Adult steelhead might be able to migrate past the barriers during flood flows.

All project channel modifications will replace barriers to fish passage with structures that allow anadromous salmonids to migrate upstream during flood flows. Two impassable channel drops downstream of West Edith Avenue and five impassable channel drops at Foothill College will be replaced with passable structures. At the El Camino Real, Foothill Expressway and O'Keefe Lane culvert replacement sites, two impassable drops at each site will be replaced with passable structures. In addition, all culverts will have low-flow channels with baffles that provide suitable passage for fish. The erosion control sites will not affect fish passage.

Project construction will not result in the placement of any new barriers to fish passage. On the contrary, it will improve the ability of fish to migrate upstream through the project area. No significant impacts to fish migration will result from construction.

Disturbance to Active Raptor Nests from Construction Activities During Project Implementation

No raptor nests were detected during any of the surveys along the creek. It is considered unlikely that nests would be established between now and the time of construction. However, preconstruction surveys for raptor nests would be performed. In the event that a raptor nest (occupied or unoccupied) is reported in the project area prior to, or during construction, a qualified biologist and the appropriate agencies would be consulted to determine if measures are needed to protect the nest.

Loss of Developed Habitat and Landscaped/Non-native Habitat Not Located Within the Riparian Corridor

Implementation of the proposed project would result in the removal of approximately 0.57 acres of developed area and 0.49 acres landscaped/non-native habitat not associated with the riparian corridor. Developed and landscaped/non-native areas are regionally abundant and support few native plant and animal species compared to less disturbed habitats. Any biotic resources associated with these habitats would continue to be abundant following project implementation.

The loss of these habitats from the project site would not significantly affect botanical or wildlife resources.

Loss of Ordinance Trees

There may be a loss of ordinance trees from the project. It is estimated that there are 10 coast live oaks located within the project area's riparian corridor that meet local tree ordinances. There do not appear to be additional ordinance trees within the project area, outside of the riparian corridor. The removal of trees would require permits from the municipalities. The project may be required by the municipalities to provide tree removal plans prior to construction and to obtain tree removal permits. The loss of trees, including ordinance trees, from within the riparian corridor is significant and is addressed in **Project Impacts Found to be Significant - Loss or Degradation of Habitats within the Riparian Corridor via Vegetation Removal** later in this section.

Conversion of Existing Culverts and Transition Structures to New Culverts and Transition Structures (Including Riverine Habitat within Such Structures)

Implementation of the proposed project would result in the replacement of five existing culverts and transition structures and the addition of one culvert. Existing culverts and transition structures, which currently consist of unvegetated artificial surfaces, would be replaced with new structures consisting of artificial surfaces. The new culvert and transition structures are to be designed so that they would not create barriers to native fishes or other wildlife movement. All drop structures will be "fish passable" and all culvert low flow channels will have baffles to create resting spots. The replacement of the existing structures with new structures would, therefore, not significantly affect wildlife resources. The loss of vegetation due to culvert replacements is covered as a Significant Impact (see section on Loss or Degradation of Habitats within the Riparian Corridor via Vegetation Removal).

Construction of Rock Weirs

The construction of eight rock weirs would involve reconstructing two existing channel stabilization structures and installing six new weirs. The six new weirs would be vortex rock weirs constructed with large boulders, inset into the channel bottom in a arch shape, with the bottom of the arch on the weir's upstream end. None of the construction sites are vegetated, so no habitat loss would occur. The vortex rock weirs are passable to fish, and create a resting pool on their downstream side that is desirable fish habitat. This is a fisheries enhancement technique, and does not represent a negative impact.

Resurfacing of Existing Natural Channel Bed

Channel beds that are composed of soil, gravels, or other native materials allow the establishment of vegetation and also provide habitat to a wide variety of aquatic invertebrates, insects, fish, reptiles, amphibians, etc. The project could result in the covering of 826 linear feet and 9,763 square feet of existing native bed with riprap or gabions at the Foothill College site and the culvert sites. There is no net loss of natural channel bed at the West Edith Avenue site or the erosion repair sites. The channel bottom at West Edith Avenue is already predominately artificial. Erosion repair work is generally located on the banks.

Proposed modifications at the Foothill College site would include resurfacing of the natural channel bed. Currently, the channel bed on the upstream portion of the site is concrete-lined. Downstream of the existing bypass culvert, the channel consists of bare earth, gunite, and riprap. The bare earth areas have little vegetation, steep or bare banks, and very low aquatic habitat values. The proposed project would install riprap on 955 feet (out of 1,255 total feet) of channel bottom, resulting in a net loss of 414 linear feet and 4,140 square feet of soil channel bottom. However, as described above, the soil channel is of low biotic value. Upstream of the bypass culvert outlet, the existing gunite channel would be replaced with an earthen bottom. Downstream of the bypass structure, the channel would be widened by about seven feet with a low-flow fish channel in the bottom; riprap would be installed below grade on the channel bottom; and a series of step-pools would be constructed. Although riprap channel bottoms generally have low aquatic habitat values, the surface of the proposed riprap channel bottom would quickly fill with natural sediments between and over the rocks. This rock and sediment base would support groundcovers and emergent vegetation throughout most of the year, and replace the habitat values lost in resurfacing the disturbed native soil channel. In summary, this resurfacing is considered a less-than-significant impact.

All except one (Foothill Expressway) of the culvert sites already consist of concrete structures that would be widened. The project would add artificial surfaces to existing native channel beds, with a net loss of 412 linear feet and 5,623 square feet of native soil channel bed. The majority of this channel bed loss is between existing wing walls or adjacent to the existing concrete channel bottom within the culverts. These areas are dry throughout most of the year, support very little vegetation, and are heavily disturbed by high velocity flows near the culverts. Given the low habitat values and lack of value to fisheries, the loss of these areas is considered less than significant. The project's proposal to replace fish barriers with passable structures further reinforces this finding of less-than-significant impacts.

Corps and California Department of Fish and Game Jurisdictional Impacts

Project construction will include both cut and fill within Corps and CDFG jurisdiction as shown in Table 10. However the project will not result in a *net* fill within either jurisdiction and therefore impacts associated with grading are considered to be less than significant.

There are several small areas of jurisdictional wetlands totaling 0.09 acres within project sites. Most of these jurisdictional wetland areas occur on portions of the channel bottom that are currently on existing artificial surfaces that have been covered with silt. As noted in the discussion of **Riverine Habitat** in the **Existing Setting** section (**Section II., D., 1., Biotic Habitats-Riverine**), the amounts and locations of seasonal wetland vegetation change from year to year depending on the channel conditions. The seasonal wetland vegetation occurring consists almost exclusively of watercress. Small patches of emergent vegetation, consisting of small-fruited bulrush are present at the Foothill College channel modification site. The project would not result in the net loss of jurisdictional wetlands. Some temporary loss of small amounts of wetland vegetation may occur. It is expected that the vegetation would quickly recolonize, and therefore, impacts are considered less than significant. The significant impacts related to vegetation removal and resurfacing of soil channel banks within resource agency jurisdiction are addressed in the **Project Impacts Found to be Significant** later in this section.

TABLE 10
CUT AND FILL WITHIN CORPS AND CDFG JURISDICTION

Site	Corps (cubic yards)		CDFG (cubic yards)	
	Cut	**Fill**	**Cut**	**Fill**
Foothill College Channel Modification	4926	3330	7476	3986
West Edith Avenue Channel Modification	2377	1569	3133	2339
El Camino Real Culvert	892	688	1104	1096
Yerba Buena Culvert	165	108	169	111
Foothill Expressway Culvert	172	172	172	172
Burke Road Culvert	24	24	24	24
O'Keefe Lane Culvert	96	27	96	27
Tepa Way Culvert	57	27	57	27
Erosion Control Sites	2785	4459	2785	4459
Total	**11,494**	**10,404**	**15,016**	**12,241**
Net	**1090**		**2775**	

Temporary Degradation of Water Quality During Construction

Construction of the proposed project, including grading within and adjacent to the creek, removal and replacement of existing instream structures, and installation of new structures within the stream bed and bank would expose bare soils and could result in erosion and sedimentation of the creek. The project proposes best management practices to reduce water quality impacts from erosion and sedimentation (listed in the Engineer's Report). The construction contractor is required to prepare a Stormwater Pollution Prevention Plan. The project also specifies that grading would only occur during dry months (April 15 - October 15) and all exposed soil surfaces would be recovered or seeded as work progresses. Given these precautionary measures, no significant impacts upon vegetation and wildlife are anticipated from the temporary degradation of water quality during construction.

Loss of Vegetation During Routine Maintenance Activities

During any five year period, routine vegetation clearing conducted in accordance with the project's Maintenance Program could result in the loss of approximately 4,650 square feet (0.11 acres) of Himalayan blackberry that overhangs the low-flow creek channel (see Chapter 7 of the Engineer's Report). The majority of this vegetation clearing would be conducted in areas where tree canopy provides channel shading, even without the Himalayan blackberry. The vegetation is cleared by hand and removed manually from the channel by laborers. The limits of clearing are the edges of the low-flow channel, which averages four to eight feet in the areas where removal typically occurs. The branches that overhang the channel are cut, and limited herbicide applications are used in some areas. Nevertheless, most plants' roots within the channel bank are not damaged. Himalayan blackberry is an aggressive plant that quickly regrows. Some non-native grasses would be removed on the maintenance ramps and occasionally small amounts of tree branches and shrubs that obstruct flows would be removed. There are no special status wildlife species or significant fisheries resources that depend on these maintenance areas. Given the limited nature of the vegetation removal, the aggressive regrowth of the plants, and the absence of significant dependent wildlife resources, this impact is considered less than significant. Please note that future erosion repair as a maintenance activity is discussed as a significant impact in the next section.

PROJECT IMPACTS FOUND TO BE SIGNIFICANT

The biological resources discussed below include those that are protected by local, state and federal laws. In addition, a plant or animal not placed on an official list was considered rare if certain criteria were met (Section 15380, CEQA Guidelines). Project effects found to be significant are described below.

Loss or Degradation of Habitats within the Riparian Corridor via Vegetation Removal

Riparian habitat is a biotically significant and increasingly scarce resource in California. High-quality riparian vegetation was once extensive throughout central California. Riparian habitats were used by migratory wildlife and by numerous resident wildlife species dependent on their structural and floristic complexity for cover, breeding, and foraging. Over the past sixty years, forests in California have been cut down for fuel wood, cleared for agriculture, developed into towns and cities, or otherwise destroyed or degraded by stream channelization, diversions of water for agriculture, or the lowering of local groundwater by pumping. Although it is generally recognized that only a small fraction of the pre-settlement riparian habitats remain today, estimates of the present size of riparian habitats within California are not available. Loss of riparian habitat is considered a significant impact.

The loss or degradation of any mixed riparian forest within the riparian corridor, due to vegetation removal or the placement of gabions or riprap from the project is a significant impact. Additionally, activities within certain portions of these habitats are regulated by the CDFG and the Corps, and a permit from each of these agencies (if applicable) would be obtained prior to beginning activities which may affect these habitats.

Mixed riparian forest and landscaped/non-native habitat located within the riparian corridor would be lost due to removal of vegetation during project implementation.

Implementation of the proposed project would result in the loss of a total of 1.40 acres of habitat in the riparian corridor, as shown in Table 11. Table 12 summarizes the riparian corridor impacts by reach.

Table 13 summarizes total tree stem loss for the proposed project. Site-by-site tree impacts are listed in Appendix C. (As noted in the **Impact Methodology** section, if several trunks of a single tree occurred at breast height, each trunk was counted separately.)

TABLE 11
RIPARIAN CORRIDOR IMPACTS SUMMARY

Site	Riparian Habitat (Square Feet)			Total Impact Area	
	Low Value	Medium Value	High Value	Square Feet	Acres
West Edith Avenue	16,001	4,058	150	20,209	0.46
Foothill College	2,785	4,535	10,096	17,416	0.40
Culvert Sites	2,924	9,367	125	12,416	0.28
Erosion Repair Sites	8,423	2,671	0	11,094	0.25
Total	**30,133**	**20,631**	**10,371**	**61,135**	**1.40**

The impacts upon riparian or stream habitat resulting from each element of the proposed project are summarized below.

W. Edith Avenue Channel Modification Site (Reach 5) The proposed project would result in the loss of 0.46 acres of habitat on the right bank of the riparian corridor. The vegetation on the left bank, including redwoods lining the channel, would not be impacted by the project. The right bank impact area consists primarily of lower habitat quality. Tree stem impacts total 147, including 58 natives and 89 non-natives. Most (126) of these stems are in the small size range (1-11 inch d.b.h.).

Foothill College Channel Modification Site (Reach 11) The proposed project would result in the loss of 0.40 acres of habitat. Tree stem loss in the riparian corridor totals 157 with most being smaller natives (137). Of the native tree stem loss, 89 are small coast live oaks. Seventy-seven of these were planted as landscaping on the right bank. The college may move some of these trees to other places on campus.

Culvert Replacement Sites The proposed project activities at six culvert sites would result in the loss of 0.28 acres of habitat. Tree stem loss totals 118, including 75 native and 43 non-native trees, with most (111) in the small size class. Table 14 summarizes the impacts upon riparian habitat by individual culvert site.

Bank Erosion Repair Sites The proposed project activities at 17 bank erosion repair sites would result in impacts to 0.25 acres of habitat. Table 15 summarizes individual site impacts. Tree loss totals five tree stems.

REVISED TABLE 12
RIPARIAN CORRIDOR IMPACTS BY REACH

		Station No.	Riparian Habitat Impact (acres)			Total Impact Area	
			Low	Medium	High	sq. ft.	acres
Reach 1	Culvert-El Camino Real	250+95	360	4046 ~~3146~~	25	4431 ~~3531~~	0.10 ~~0.08~~
	Erosion Control Site #1	255+00	900	0	0	900	0.02
	Erosion Control Site #2	261+00	240	0	0	240	0.01
	Erosion Control Site #3	261+60	810	0	0	810	0.02
	Erosion Control Site #4	263+40	360	0	0	360	0.01
	Subtotal Reach 1		2670	4046 ~~3146~~	25	6741 ~~5841~~	0.15 ~~0.13~~
Reach 2	Erosion Control Site #5	297+00	64	1600	0	1664	0.04
	Erosion Control Site #6	304+00	379	21	0	400	0.01
	Erosion Control Site #7	307+40	1275	0	0	1275	0.03
	Erosion Control Site #8	311+30	1260	0	0	1260	0.03
	Subtotal Reach 2		2978	1621	0	4599	0.11
Reach 3	Erosion Control Site #9	316+00	0	500	0	500	0.01
	Erosion Control Site #10	323+00	225	0	0	225	0.01
	Erosion Control Site #11	331+00	360	0	0	360	0.01
	Erosion Control Site #12	333+40	1020	0	0	1020	0.02
	Subtotal Reach 3		1605	500	0	2105	0.05
Reach 4	Culvert-Yerba Buena Ave.	364+88	250	56	0	306	0.01
	Erosion Control Site #13	371+30	250	0	0	250	0.01
	Subtotal Reach 4		500	56	0	556	0.01
Reach 5	Channel Modification -W Edith Ave.		16001	4058	150	20209	0.46
	Culvert-Foothill Expressway	377+00	595	2200	100	2895	0.07
	Erosion Control Site #14	388+70	300	0	0	300	0.01
	Subtotal Reach 5		16896	6258	250	23404	0.54
Reach 7	Culvert-Burke Rd.	422+30	544	1100	0	1644	0.04
Reach 8	Erosion Control Site #15	464+00	270	0	0	270	0.01
	Erosion Control Site #16	484+40	180	0	0	180	<0.01
	Subtotal Reach 8		450	0	0	450	0.01
Reach 9	Culvert-O-Keefelane	491+30	690	1220	0	1910	0.04
Reach 11	Channel Modification-Foothill Coll.		2785	4535	10096	17416	0.40
Reach 12	Erosion Control Site #17	533+80	530	550	0	1080	0.02
Reach 13	Culvert-Tepa Way	559+40	485	745	0	1230	0.03
TOTAL			30133	20631 ~~19731~~	10371	61135 ~~60235~~	1.40 ~~1.38~~

* No construction activities are proposed in reaches 14-16; therefore, no riparian impacts would occur in these areas.

TABLE 13
TOTAL TREE STEM LOSSES WITHIN RIPARIAN CORRIDOR HABITATS

	1-11" dbh	12-17" dbh	>18" dbh	Total
Native Trees	256	14	5	275
Non-Native Trees	128	7	17	152
Total	**384**	**21**	**22**	**427**

dbh = diameter at breast height

TABLE 14
CULVERT REPLACEMENT SITE IMPACTS

Culvert Sites	Riparian Habitat (Sq Ft)			Total Impact Area	
	Low Value	Medium Value	High Value	Square Feet	Acres
El Camino Real	360	4,046	25	4,341	0.10
Yerba Buena Avenue	250	56	0	306	0.01
Foothill Expressway	595	2,200	100	2,870	0.07
Burke Road	544	1,100	0	1,644	0.04
O'Keefe Lane	690	1,220	0	1,910	0.04
Tepa Way	485	745	0	1,230	0.03
Total	**2,924**	**9,367**	**125**	**12,416**	**0.29**

General Maintenance Program Additional erosion control sites (averaging six sites every five years based on historical averages) may be repaired as a maintenance activity in the future. Impacts due to the repair of these sites have been estimated based on the average impact of the other planned erosion control sites. This should be considered a worst case scenario. Impacts may be less than the average impacts from the other sites. In addition, replanting as part of the erosion repair lessens the ultimate impacts to the site. Assuming the worst case, future erosion repair, on average, could result in impacts to an additional 0.02 acres of habitat per year. This impact average has not been included in Tables 11 and 12. It has been used to calculate the requirements for a mitigation bank for the maintenance program (see **Section II., D., 3., Mitigation**, of this EIR).

TABLE 15
EROSION REPAIR SITE IMPACTS

Site Number	Station Number	Reach	Riparian Habitat (Square Feet)			Total Impact Area	
			Low	Medium	High	Sq Ft	Acres
1	(255+00)	1	900	0	0	900	0.02
2	(261+00)	1	240	0	0	240	0.01
3	(261+60)	1	810	0	0	810	0.02
4	(263+40)	1	360	0	0	360	0.01
5	(297+00)	2	64	1,600	0	1,664	0.04
6	(304+00)	2	379	21	0	400	0.01
7	(307+40)	2	1,275	0	0	1,275	0.03
8	(311+30)	2	1,260	0	0	1,260	0.03
9	(316+00)	3	0	500	0	500	0.01
10	(323+00)	3	225	0	0	225	0.01
11	(331+00)	3	360	0	0	360	0.01
12	(333+40)	3	1,020	0	0	1,020	0.02
13	(372+00)	4	250	0	0	250	0.01
14	(388+70)	5	300	0	0	300	0.01
15	(464+00)	8	270	0	0	270	0.01
16	(484+40)	8	180	0	0	180	0.00
17	(553+80)	12	530	550	0	1,080	0.02
		Total	**8,423**	**2,671**	**0**	**11,094**	**0.25**

Resurfacing of Soil Channel Banks

Project construction involves the installation of gabions, riprap, sacked concrete slope protection (SCSP), and geocell along the creek banks. The placement of these "hard" materials could result in a loss of native substrate (e.g. soil) and would inhibit the establishment of native vegetation (both landscaping or natural recolonization). This reduces the potential for reestablishment of riparian habitat on the channel bank and further lowers habitat values for wildlife. The net loss of native soil channel banks from resurfacing with gabions, riprap, SCSP, and geocell is considered a significant impact.

The total area of channel banks to be resurfaced with gabions, riprap, SCSP, or geocell which is not currently an artificial surface, is shown in Table 16. This total area is based on the total surface within *existing channel banks*. It does not reflect that the project would also construct broader surfaces of creek banks in areas that are currently above bank.

Habitat loss due to resurfacing was calculated based on the area of significant vegetation removal within areas to be resurfaced plus any additional areas of native soil or low quality non-native vegetation to be resurfaced. Unvegetated native soil areas and low quality non-native vegetation impacts were incorporated into the impacts assessments described previously (refer to Tables 11, 12, 14, and 15). Loss of native soil or low quality non-native vegetation bank areas were incorporated into those tables as lower quality habitat areas.

TABLE 16
RESURFACING OF BANKS THAT ARE NOT CURRENTLY ARTIFICIAL

Site	Bank Resurfacing (Square Feet)	Bank Resurfacing (Linear Feet)
West Edith Avenue	1,700	170
Foothill College	11,269	661
Culvert Sites		206
El Camino Real	500	
Yerba Buena Avenue	250	
Burke Road	338	
Foothill Expressway	415	
O'Keefe Lane	908	
Tepa Way	1,000	
Erosion Repair Sites	10,163	1,030
Total	**26,543**	**2,067**

3. MITIGATION

FOR SIGNIFICANT IMPACTS ASSOCIATED WITH LOSS OR DEGRADATION OF HABITATS WITHIN THE RIPARIAN CORRIDOR

Project impacts to riparian habitat from vegetation removal, and proposed mitigation acreages are provided in Table 17. Table 18 summarizes mitigation requirements by reach. Mitigation acreage is calculated by applying a ratio of 1:1 to low quality riparian habitat, 2:1 to medium quality habitat, and 3:1 to high quality habitat. Using these ratios, the total acreage of mitigation proposed is 2.35 acres. The implementation of the mitigation described herein would reduce the project impacts to stream-associated habitats to a less-than-significant level.

The District has also proposed a mitigation bank for the general maintenance program that will be useable for as long as 100 years based on anticipated need. For District planning purposes, the mitigation area required was calculated by using economic theory that gives a present worth, or what mitigation bank area is required to be built now, for the average annual needs based on a worst case impact of six erosion repair sites every five years (1.2 sites per year with a mitigation requirement of 0.023 acres). The result is a mitigation bank of 0.29 acres. Any erosion repair project which generates habitat above and beyond mitigation requirements, will credit values to the mitigation bank.

TABLE 17
IMPACTS SUMMARY AND MITIGATION REQUIREMENTS

Site	Riparian Habitat Impacts (Area-Square Feet)			Total Impact Area		Mitigation	
	Low Value	Medium Value	High Value	Square Feet	Acres	Square Feet	Acres
West Edith Avenue	16,001	4,058	150	20,209	0.46	24,567	0.56
Foothill College	2,785	4,535	10,096	17,416	0.40	42,143	0.97
Culvert Sites	2,924	9,367	125	12,416	0.28	22,033	0.51
Erosion Repair Sites	8,423	2,671	0	11,094	0.25	13,765	0.32
Total	**30,133**	**20,631**	**10,371**	**61,135**	**1.40**	**102,508**	**2.35**[8]

The total mitigation area to be provided therefore totals 2.64 acres. As described below, five mitigation sites have been identified that could accommodate 2.64 acres of high quality riparian habitat along Adobe Creek (see Figure 15). The five sites together provide sufficient mitigation acreage. Table 19 lists the acreages available at each site. During final mitigation design, one or more of the sites may not be used, or the full acreage of some of the sites may not be required. A total mitigation acreage of 2.6 acres would, however, be provided. A conceptual description of the five mitigation sites is provided below. A final mitigation and monitoring plan for the sites would be developed during the regulatory permitting process.

---

[8] This total does not include the 0.29 acres of mitigation for use as a mitigation bank for routine maintenance.

TABLE 18
IMPACTS SUMMARY AND MITIGATION REQUIREMENTS BY REACH

		Station No.	Riparian Habitat Impact (acres)			Total Impact Area		Mitigation Area	
			Low	Medium	High	sq. ft.	acres	sq. ft.	acres
Reach 1	Culvert-El Camino Real	250+95	360	3146	25	3531	0.08	6727	0.15
	Erosion Control Site #1	255+00	900	0	0	900	0.02	900	0.02
	Erosion Control Site #2	261+00	240	0	0	240	0.01	240	0.01
	Erosion Control Site #3	261+60	810	0	0	810	0.02	810	0.02
	Erosion Control Site #4	263+40	360	0	0	360	0.01	360	0.01
	Subtotal Reach 1		2670	3146	25	5841	0.13	9037	0.21
Reach 2	Erosion Control Site #5	297+00	64	1600	0	1664	0.04	3264	0.07
	Erosion Control Site #6	304+00	379	21	0	400	0.01	421	0.01
	Erosion Control Site #7	307+40	1275	0	0	1275	0.03	1275	0.03
	Erosion Control Site #8	311+30	1260	0	0	1260	0.03	1260	0.03
	Subtotal Reach 2		2978	1621	0	4599	0.11	6220	0.14
Reach 3	Erosion Control Site #9	316+00	0	500	0	500	0.01	1000	0.02
	Erosion Control Site #10	323+00	225	0	0	225	0.01	225	0.01
	Erosion Control Site #11	331+00	360	0	0	360	0.01	360	0.01
	Erosion Control Site #12	333+40	1020	0	0	1020	0.02	1020	0.02
	Subtotal Reach 3		1605	500	0	2105	0.05	2605	0.06
Reach 4	Culvert-Yerba Buena Ave.	364+88	250	56	0	306	0.01	362	0.01
	Erosion Control Site #13	371+30	250	0	0	250	0.01	250	0.01
	Subtotal Reach 4		500	56	0	556	0.01	612	0.01
Reach 5	Channel Modification-W. Edith Ave.		16001	4058	150	20209	0.46	24567	0.56
	Culvert-Foothill Expressway	377+00	595	2200	100	2895	0.07	5295	0.12
	Erosion Control Site #14	388+70	300	0	0	300	0.01	300	0.01
	Subtotal Reach 5		16896	6258	250	23404	0.54	30162	0.69
Reach 7	Culvert-Burke Rd.	422+30	544	1100	0	1644	0.04	2744	0.06
Reach 8	Erosion Control Site #15	464+00	270	0	0	270	0.01	270	0.01
	Erosion Control Site #16	484+40	180	0	0	180	<0.01	180	<0.01
	Subtotal Reach 8		450	0	0	450	0.01	450	0.01
Reach 9	Culvert-O'KeefeLane	491+30	690	1220	0	1910	0.04	3130	0.07
Reach 11	Channel Modification-Foothill Coll.		2785	4535	10096	17416	0.40	42143	0.97
Reach 12	Erosion Control Site #17	533+80	530	550	0	1080	0.02	1630	0.04
Reach 13	Culvert-Tepa Way	559+40	485	745	0	1230	0.03	1975	0.05
TOTAL			30133	19731	10371	60235	1.38	100708	2.31

* No construction activities are proposed in reaches 14-16; therefore, no riparian impacts would occur in these areas.

All of the mitigation sites are contiguous with Adobe Creek and in close proximity to the impact areas. They all have good revegetation potential, few constraints, and would all ultimately provide habitat values equal to, or greater than, those of the impact sites. (See **Existing Setting** and **Impacts** sections for descriptions of habitat quality in impacted sites). The sites would be revegetated with native plant species to create mixed riparian forest habitat similar to that in the highest habitat quality impact areas. All portions of the sites that are contiguous with the creek channel would be planted with trees to shade the channel bed.

TABLE 19
MITIGATION SITE ACREAGES

Site	Area (acres)
Foothill Expressway	0.4
West Edith Avenue Channel Modification	0.3
West Edith Avenue Park	0.7
Foothill College Channel Modification	0.6
Adobe Creek Estates	0.6
Total	**2.6**

Foothill Expressway Mitigation Site (Reach 3, Station 352+00)

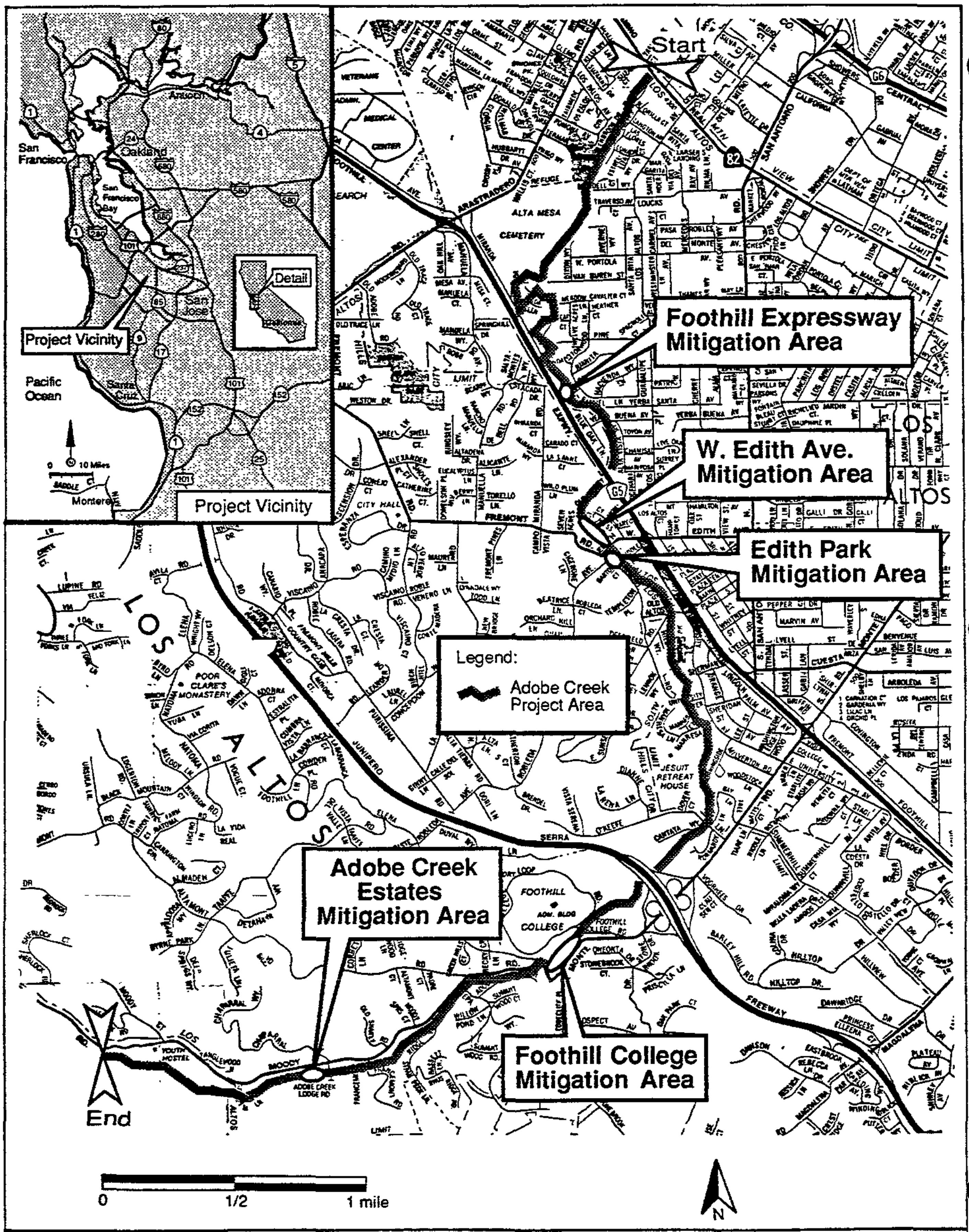
Location This site is located in Reach 3, between the west bank of the creek and Foothill Expressway, between Stations 350+00 and 355+00 (see Figure 16). Foothill Expressway runs parallel to the creek near the site.

Ownership The site is owned by the District.

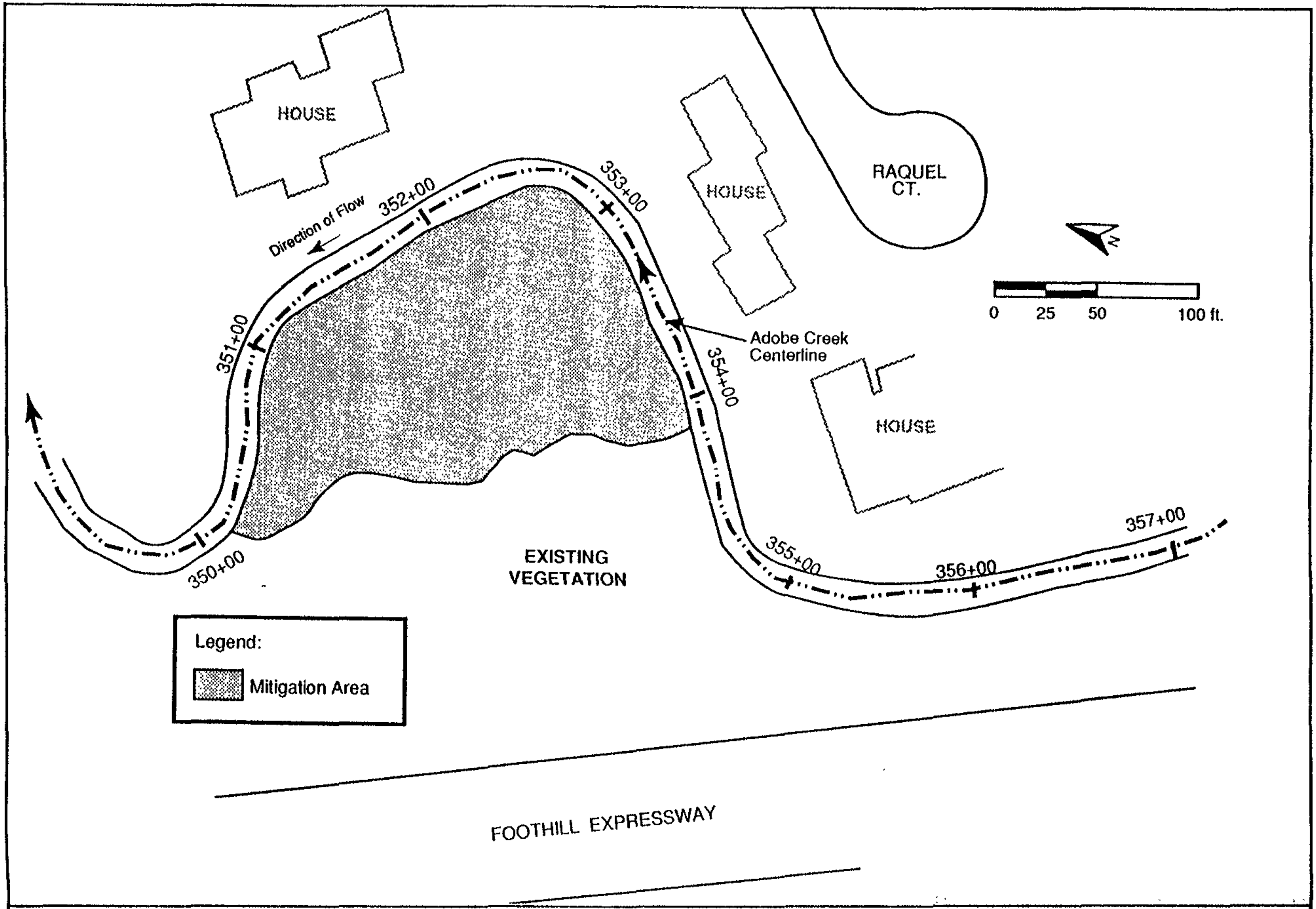
Existing Conditions The site is a flat meadow, raised approximately 10 feet above the creekbed which curves around the site. The flat meadow is approximately 150-200 feet wide at the broadest point, and tapers to narrow points at the upstream and downstream ends.

The site has numerous small (six to ten inches in diameter) coast live oaks scattered along the upper edge of the site, with a few occurring within the proposed revegetation area. There are also some large California bay trees on the downstream edge of the site. Approximately half of the channel is shaded by existing trees, with the remainder exposed. Himalayan blackberry and poison oak occur in small patches along the creek bank, and non-native grasses grow in the flat part of the site.

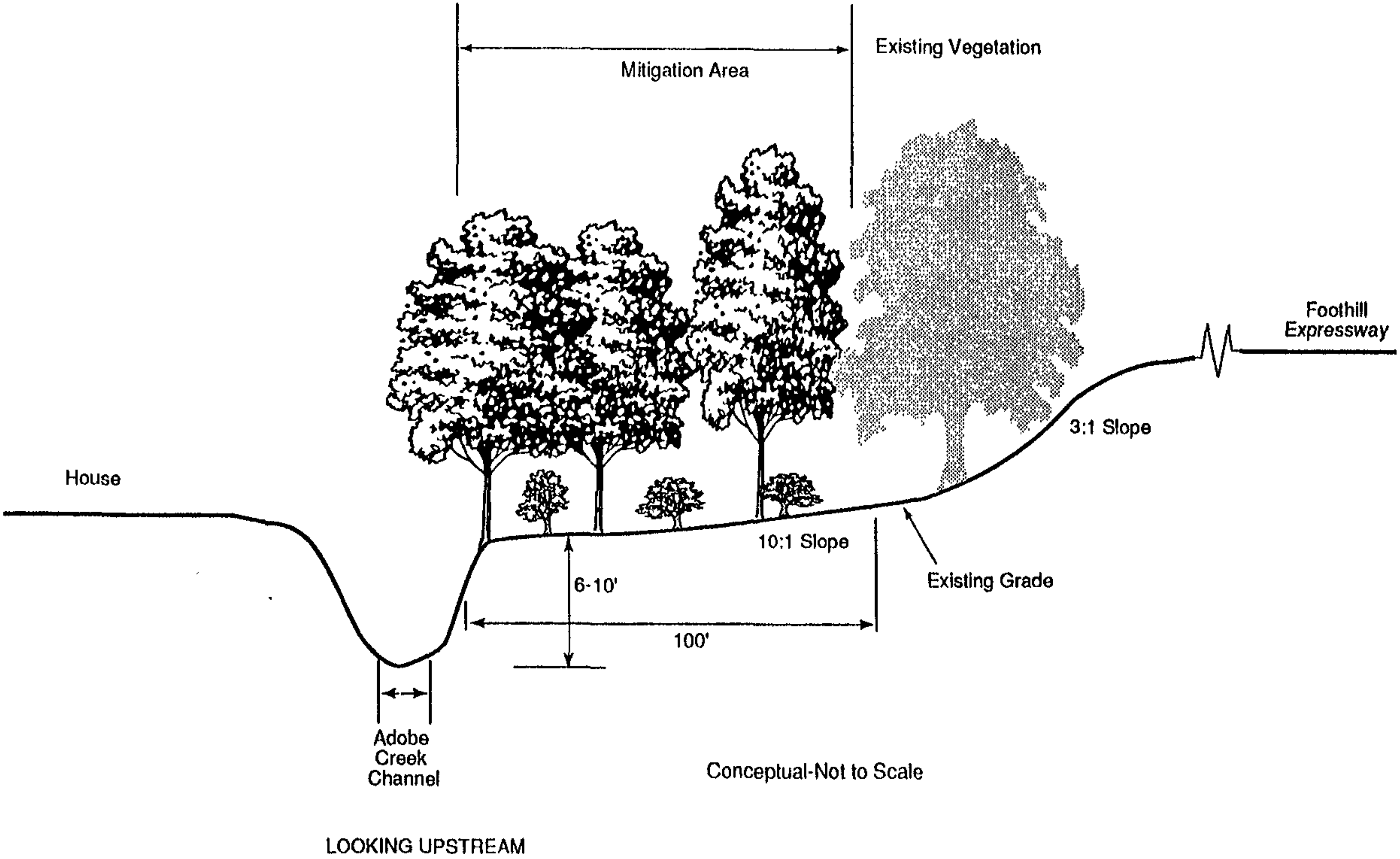
Mitigation Site Configuration The site has at least 0.4 acres available for revegetation along the creek. Figure 17 shows the site in typical cross section. The entire site would be used as mitigation, with planting fitted in and around the existing native trees.



MITIGATION SITES LOCATION MAP FIGURE 15



PLAN VIEW OF FOOTHILL EXPRESSWAY MITIGATION SITE FIGURE 16



CROSS-SECTION OF FOOTHILL EXPRESSWAY MITIGATION SITE FIGURE 17

Site Preparation The site would be cleared and grubbed of all non-native vegetation. Some light grading may be required to remove piles of dirt and smooth out the contours. Existing native trees and shrubs would be retained.

West Edith Avenue Channel Modification Mitigation Site (Reach 5)

Location This site is located in Reach 5, along the Adobe Creek channel, northwest of West Edith Avenue (between Stations 390+00 and 399+00), and is an integral part of the proposed channel modifications (see Figure 18).

Ownership The site is currently privately owned. The right-of-way that the District would require to construct the channel modification would allow for the use of the site as a mitigation area.

Existing Conditions Existing conditions and impacts that would occur during project construction are fully described in the previous sections of this EIR.

Mitigation Site Configuration The site has 0.3 acres available for riparian mitigation. Figure 19 shows the site in typical cross section. The revegetation effort would take place following construction of the gabion and rock lined channel. The mitigation area would be a mid-bank bench located on the right bank above the rock lined channel side. The areas available for mitigation would include the flat bench and a 2:1 slope above the bench. The 2:1 slope would be composed of 1.5 feet of soil overlying a buried riprap barrier. This riprap barrier is necessary to protect against erosion under high flow conditions. The final planting plan would propose species for this area that can grown over this subsoil barrier. The entire revegetation area would be 20 feet wide and 650 feet long.

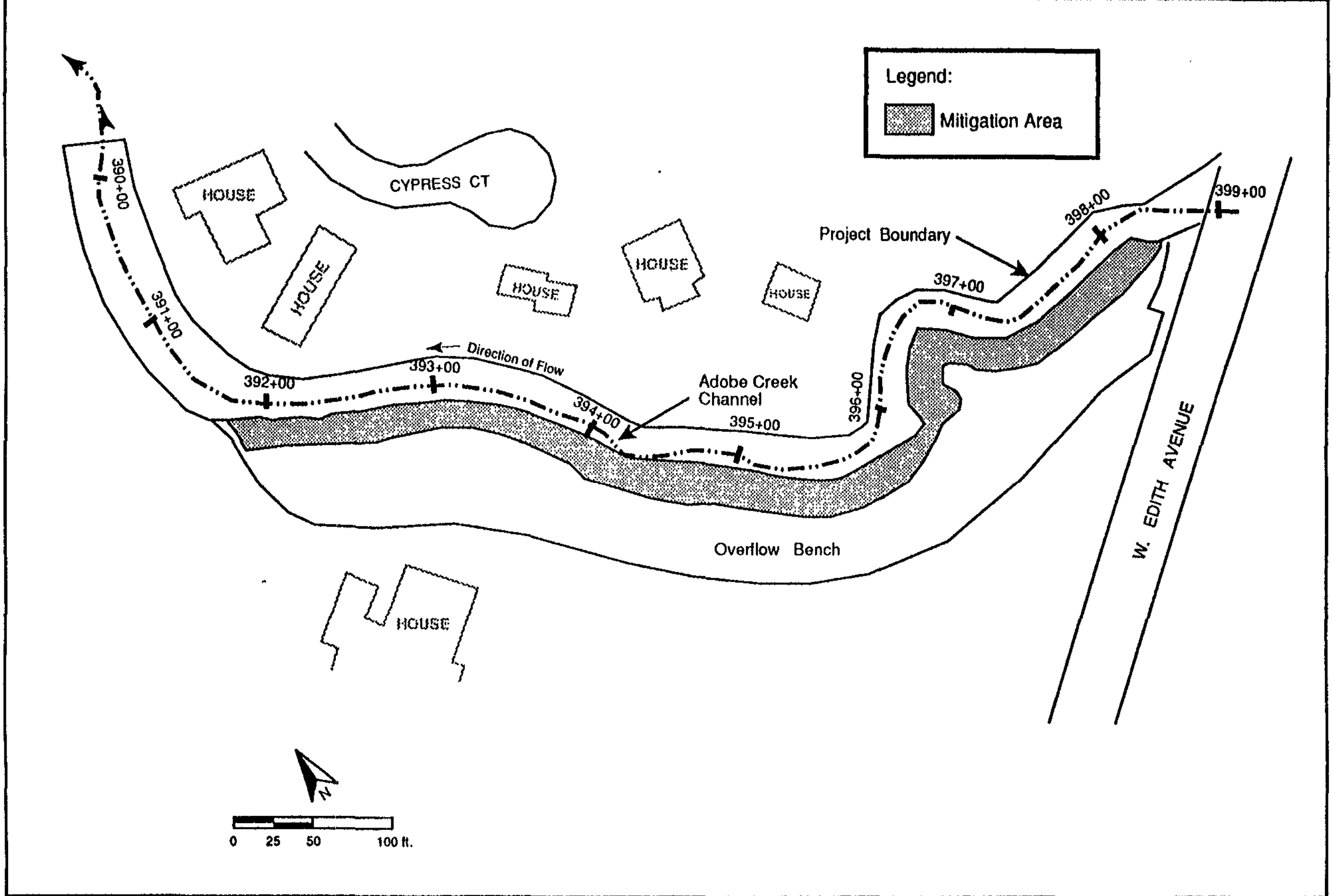
Site Preparation The bench and slope would be constructed with topsoil in the upper three feet and native subsoil below. The soil surface may be compacted following construction of the project and would be ripped to relieve compaction. Erosion protection measures such as jute net and native plant seeding would be implemented to reduce the potential for the soil to be scoured out by floods before vegetation can become established and provide erosion protection.

West Edith Avenue Park Mitigation Site (Reach 5, Station 402+60)

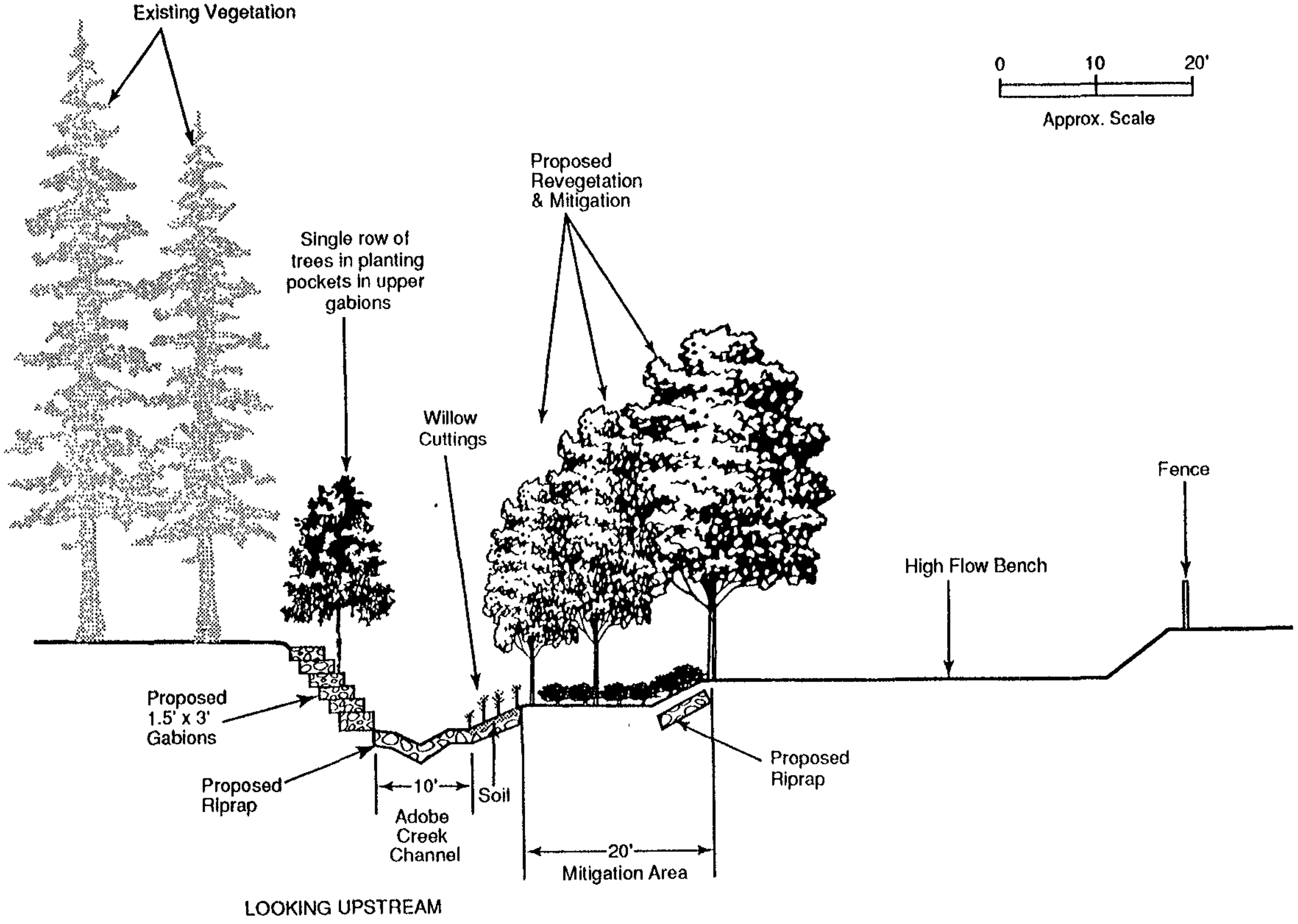
Location This site is located in Reach 5, between Adobe Creek and the intersection of West Edith Avenue and Fremont Road, immediately upstream of the West Edith Avenue channel modification site and the West Edith Avenue crossing, between Stations 399+00 and 405+00 (see Figure 20).

Ownership The site is owned primarily by the Town of Los Altos Hills, with small portions along the creek under private ownership. The District has contacted the Town of Los Altos Hills and the Town is receptive to pursuing the idea of allowing project mitigation at this location. The District would be required to obtain all necessary conservation easements or other legal permission required prior to use of the site as a mitigation area.

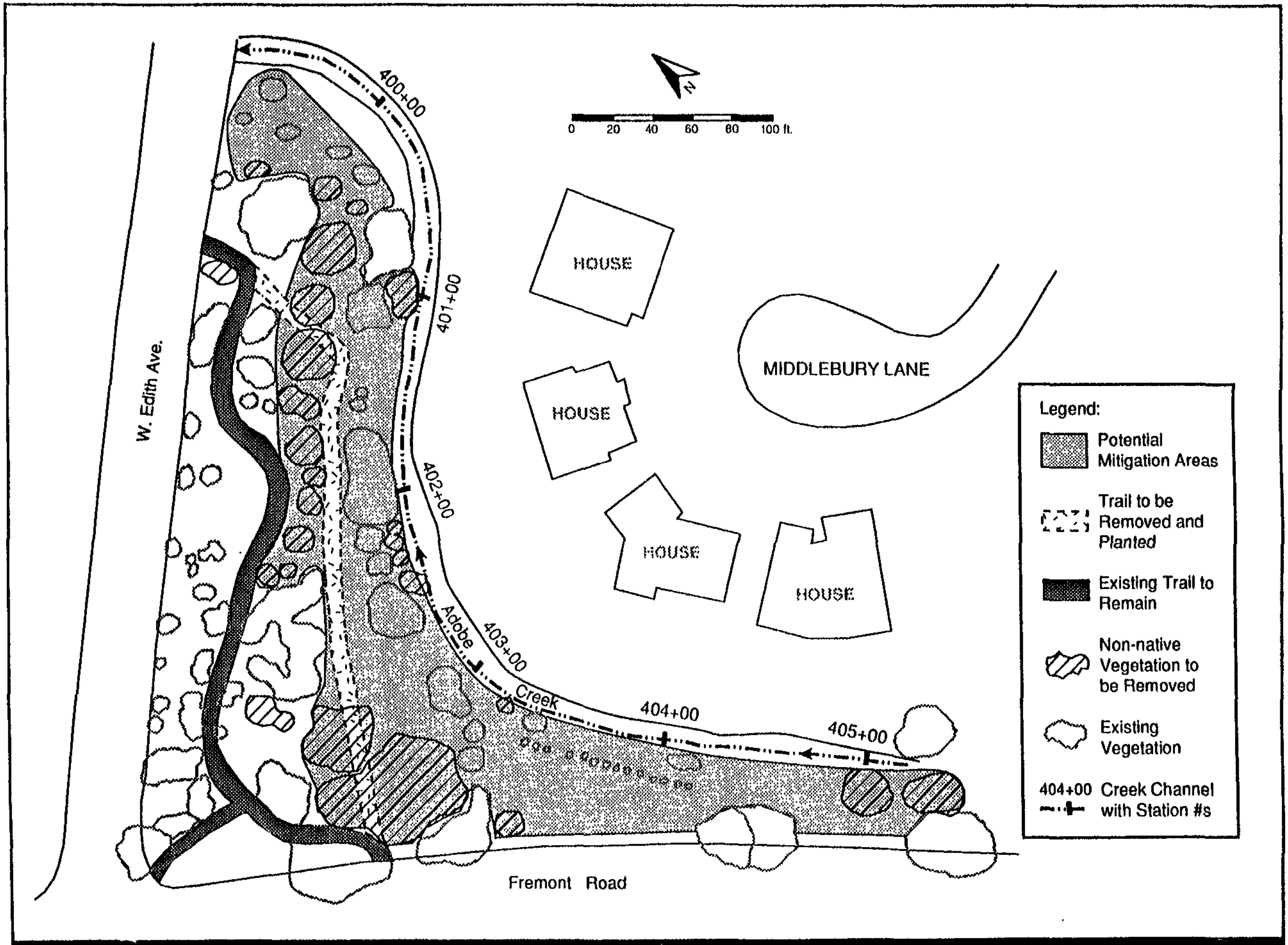
Existing Conditions The site is currently used by the community as a park area to walk or bike through. It is vegetated with a mixture of native and non-native trees and shrubs. The trees include coast live oak, eucalyptus, ornamental plum, redwood, and others. Non-native species predominate.



PLAN VIEW OF W. EDITH AVENUE CHANNEL MODIFICATION MITIGATION SITE FIGURE 18



CROSS-SECTION OF WEST EDITH AVENUE CHANNEL MODIFICATION MITIGATION SITE FIGURE 19



PLAN [illegible]EW OF WEST EDITH AVENUE PARK MITIGATI[illegible] SITE FIGURE 20

Mitigation Site Configuration The site is approximately 0.7 acres in size. Figure 21 shows the site in typical cross section. The entire site could be used as mitigation, with planting fitted in and around the existing native trees. If necessary, the mitigation could be located solely in the portions of the site closest to the stream.

Site Preparation In any areas to be used as mitigation, all non-native plants would be removed. Some light site grading may be required to remove piles of dirt and wood chips and provide a gently sloping gradient toward the creek. Some of the existing dirt pathway would also be tilled to relieve compaction.

Foothill College Channel Modification Mitigation Site (Reach 11)

Location This site is located in Reach 11, along both banks of the creek, near Foothill College (between Stations 528+50 and 541+00), and is an integral part of the proposed channel modifications (see Figure 22).

Ownership This site is within the boundaries of Foothill College. The right-of-way that the District would require to construct the channel modification would allow for the use of the site as a mitigation area.

Existing Conditions Existing conditions and impacts that would occur during project construction are fully described previously under discussions of the Foothill College channel modification site.

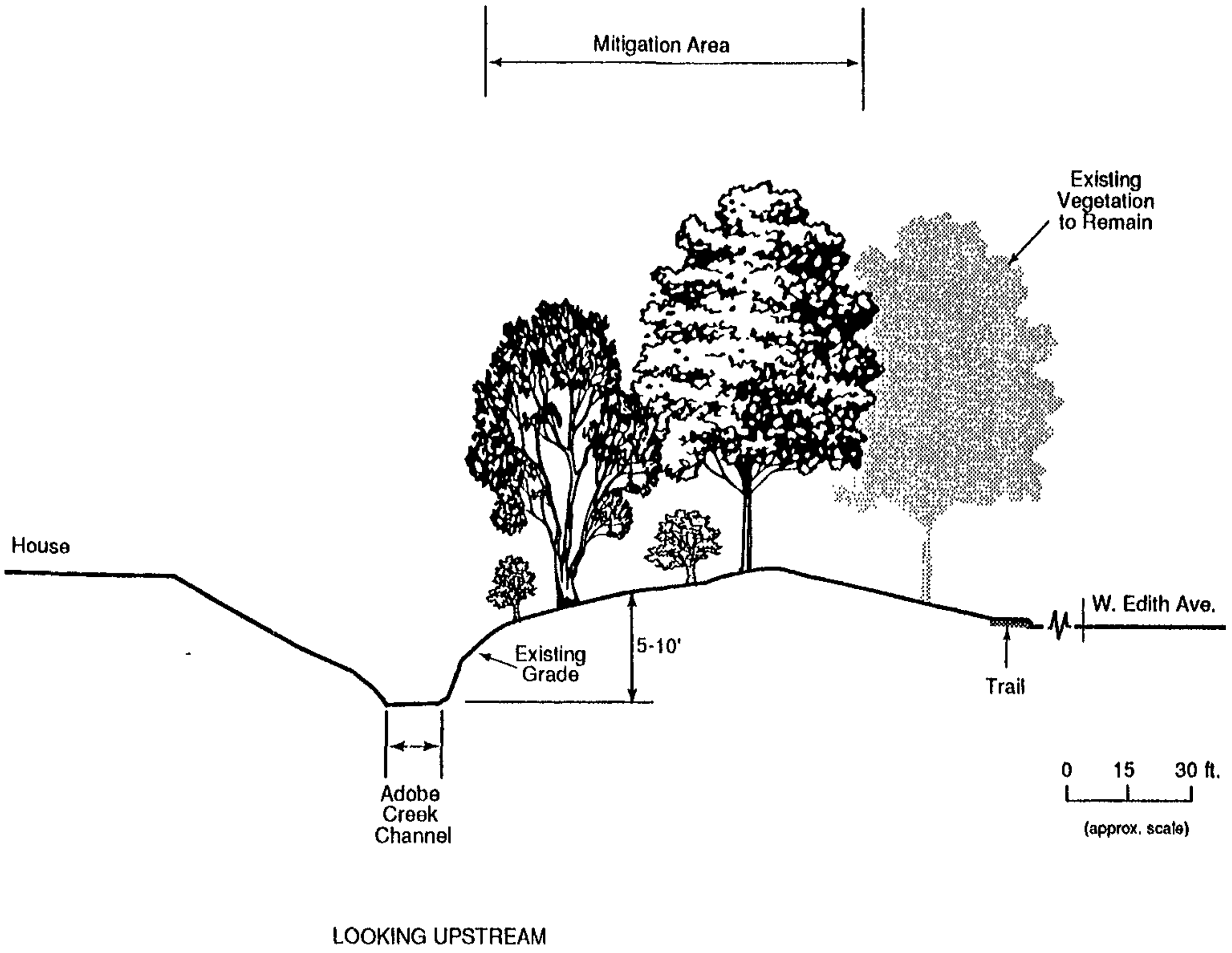
Mitigation Site Configuration This site provides at least 0.6 acres for mitigation. Figure 23 shows the site in typical cross section. The groundwater in this area is 10 to 20 feet below ground surface. The revegetation effort would occur following construction of the gabion-lined channel. The mitigation area would consist of mid-bank benches on the right and left banks above the gabion-lined channel. The areas available for mitigation would include the flat benches and a 2:1 slope above the right bank bench leading up to the Foothill College parking lot. The revegetation areas would be 10-20 feet wide on each bank, along 1,250 feet of channel.

Site Preparation The benches and slope would be constructed with topsoil in the upper three feet (native soil below). The soil may be compacted following construction of the project and would be ripped to relieve compaction. Erosion repair measures such as jute net would be implemented to reduce the potential for the soil to be scoured out by floods before the vegetation can become established and provide erosion protection.

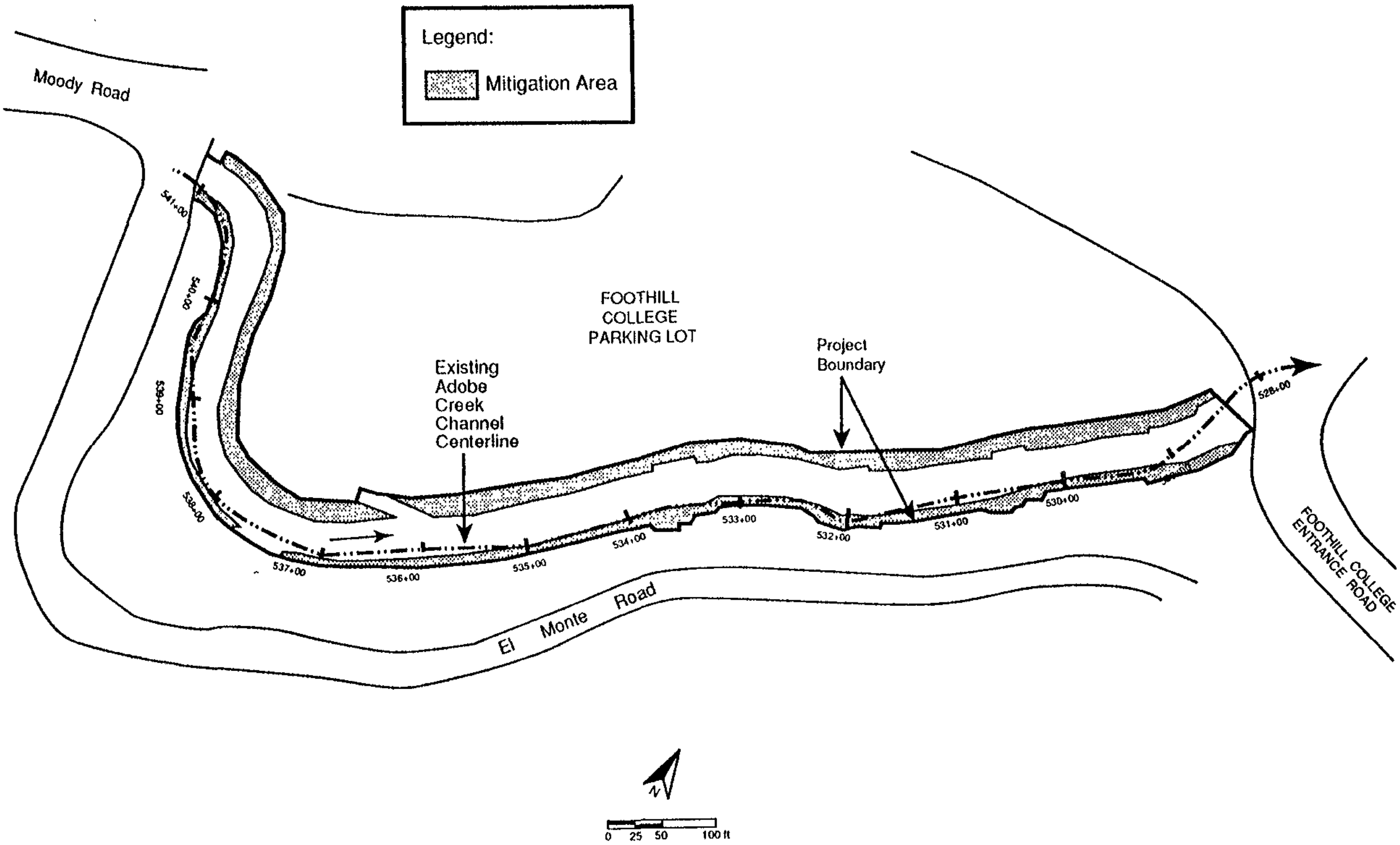
Adobe Creek Estates Mitigation Site (Reach 15, Station 599+00)

Location This site is located in Reach 15 between Stations 593+00 and 602+00. It runs parallel to Moody Road extending for 600 feet west and 300 feet east from Adobe Creek Lodge Road (see Figure 24 and 26).

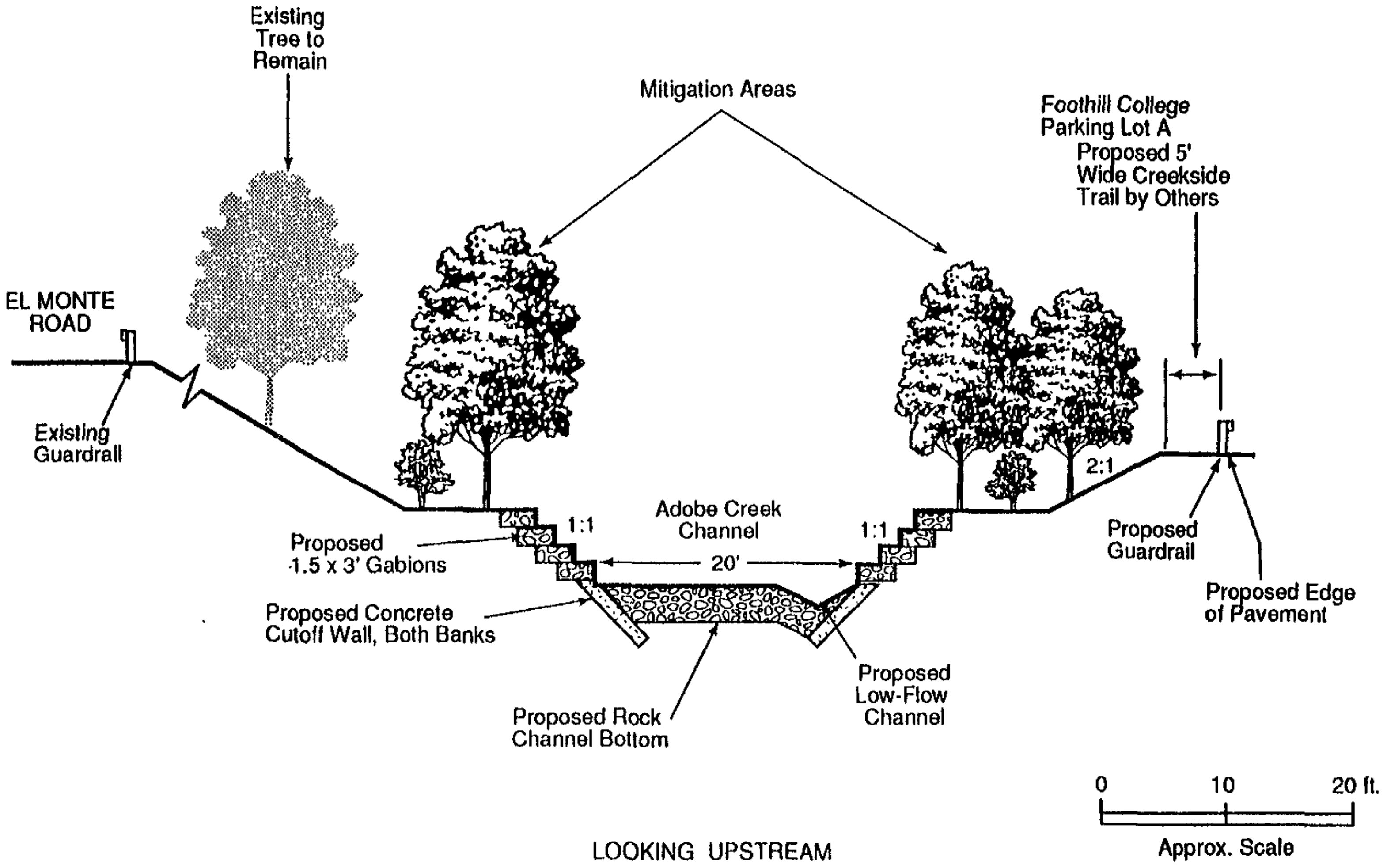
Ownership The site is privately owned. However, the Town of Los Altos Hills has conditioned the development to provide a maintenance easement to the District.



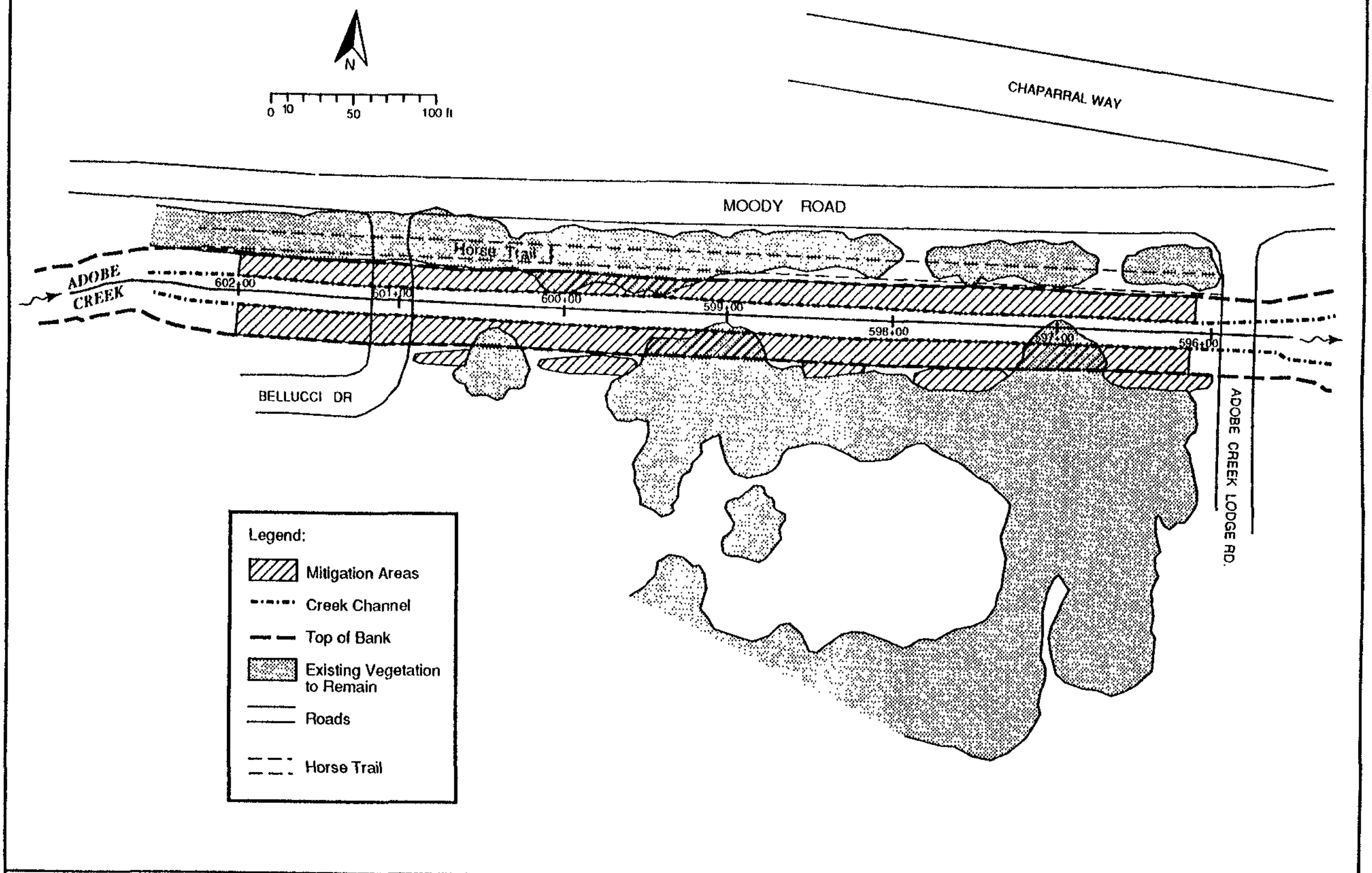
CROSS-SECTION OF WEST EDITH AVENUE PARK MITIGATION SITE FIGURE 21



PLAN VIEW OF FOOTHILL COLLEGE CHANNEL MODIFICATION MITIGATION SITE FIGURE 22


Existing Tree to Remain
Mitigation Areas
Foothill College Parking Lot A
Proposed 5' Wide Creekside Trail by Others
EL MONTE ROAD
Existing Guardrail
2:1
Adobe Creek Channel
1:1
1:1
Proposed 1.5 x 3' Gabions
20'
Proposed Guardrail
Proposed Edge of Pavement
Proposed Concrete Cutoff Wall, Both Banks
Proposed Low-Flow Channel
Proposed Rock Channel Bottom
0
10
20 ft.
Approx. Scale
LOOKING UPSTREAM

CROSS-SECTION OF FOOTHILL COLLEGE CHANNEL MODIFICATION MITIGATION SITE FIGURE 23



PLAN VIEW OF ADOBE CREEK ESTATES MITIGATION SITE (WEST OF ADOBE CREEK LODGE ROAD) FIGURE 24

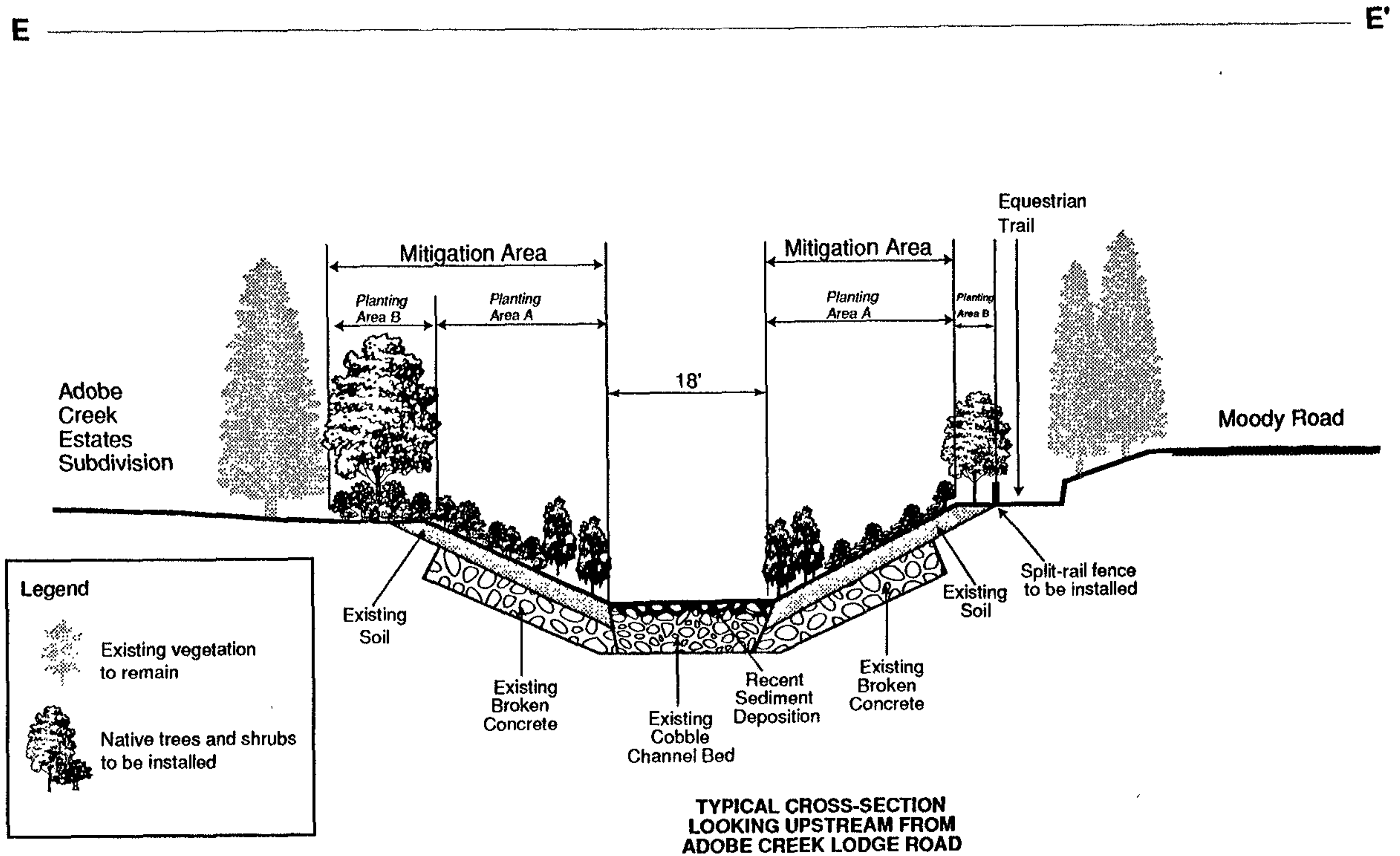
Existing Conditions The channel in this location was realigned and reconfigured during construction of an adjacent development. The new configuration consists of an 18 foot wide channel bottom with 2:1 side slopes. The slopes were created with angular, crushed concrete overlain with 18 inches of soil.

A 12-14 foot wide bench at the top of the right bank is currently used as an equestrian trail. A line of ornamental cedars (*Cedrus sp.*) and coast live oak occupies a narrow strip between the trail and Moody Road. A 12-15 foot wide open area at the top of the left bank extends to a line of ornamental trees. The canopy from these trees shades much of this open area. The side slopes and tops of both banks have been hydroseeded.

Mitigation Site Configuration The site has at least 0.6 acres available for mitigation. Figures 25 and 27 show the site in typical cross section. Most of the planting (0.4 acres) would occur on the side slopes. Small areas (totaling 0.07 acres) between existing canopy at the top of the left bank could also be planted.

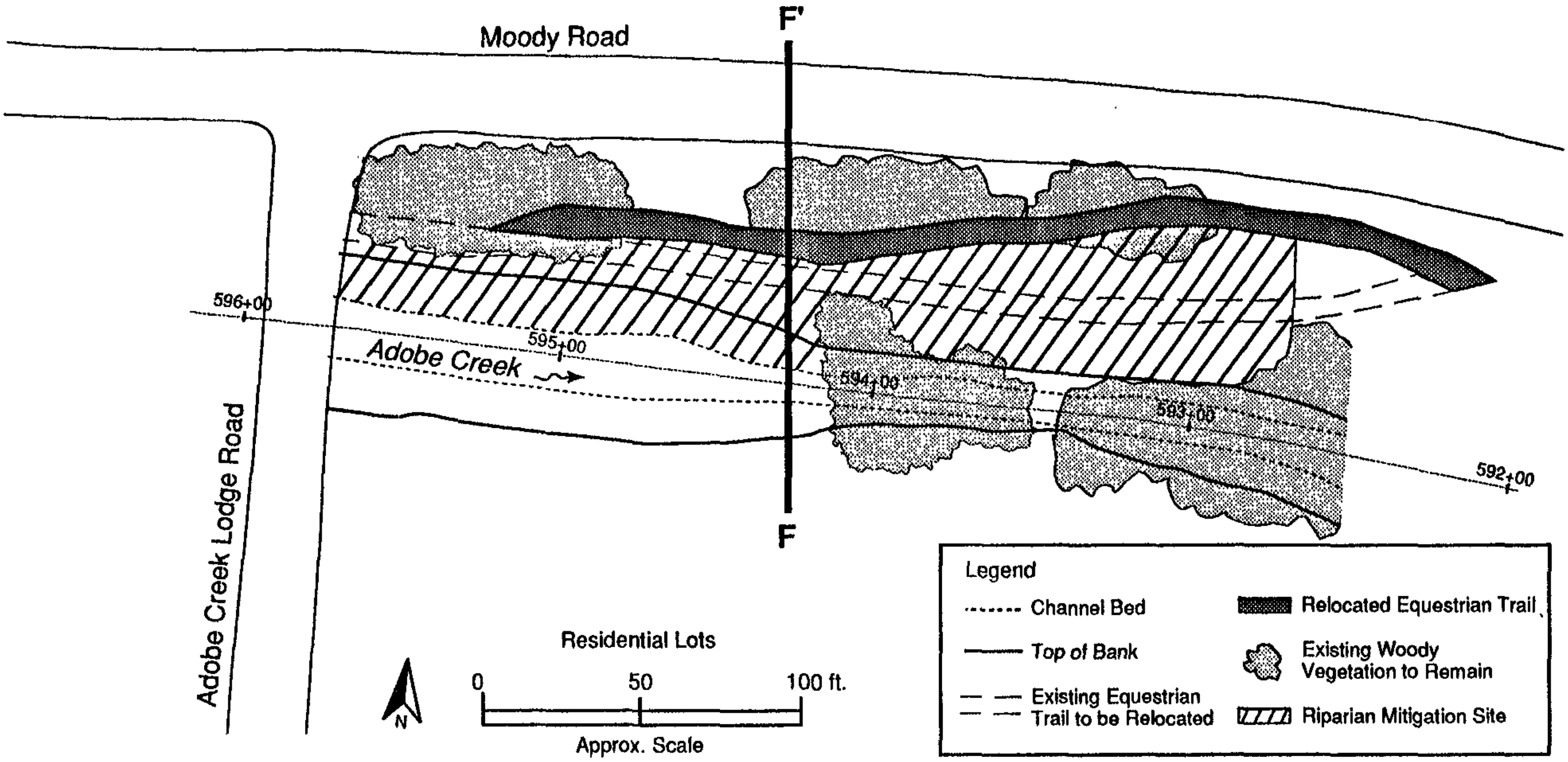
The final planting plan would propose species that grow on the side slopes underlain by the crushed concrete. Willow cuttings could be installed on these side slopes. More drought tolerant species such as coast live oak, California bay, and Mexican elderberry would be proposed for the top of left bank planting areas.

Site preparation The site would require no grading to be suitable for planting. The existing hydroseeding would be left intact in areas between planting basins.


E
E'
Equestrian Trail
Mitigation Area
Mitigation Area
Planting Area B
Planting Area A
Planting Area A
Planting Area B
18'
Adobe Creek Estates Subdivision
Moody Road
Existing Soil
Existing Broken Concrete
Existing Cobble Channel Bed
Recent Sediment Deposition
Existing Broken Concrete
Existing Soil
Split-rail fence to be installed
Legend
Existing vegetation to remain
Native trees and shrubs to be installed
TYPICAL CROSS-SECTION LOOKING UPSTREAM FROM ADOBE CREEK LODGE ROAD

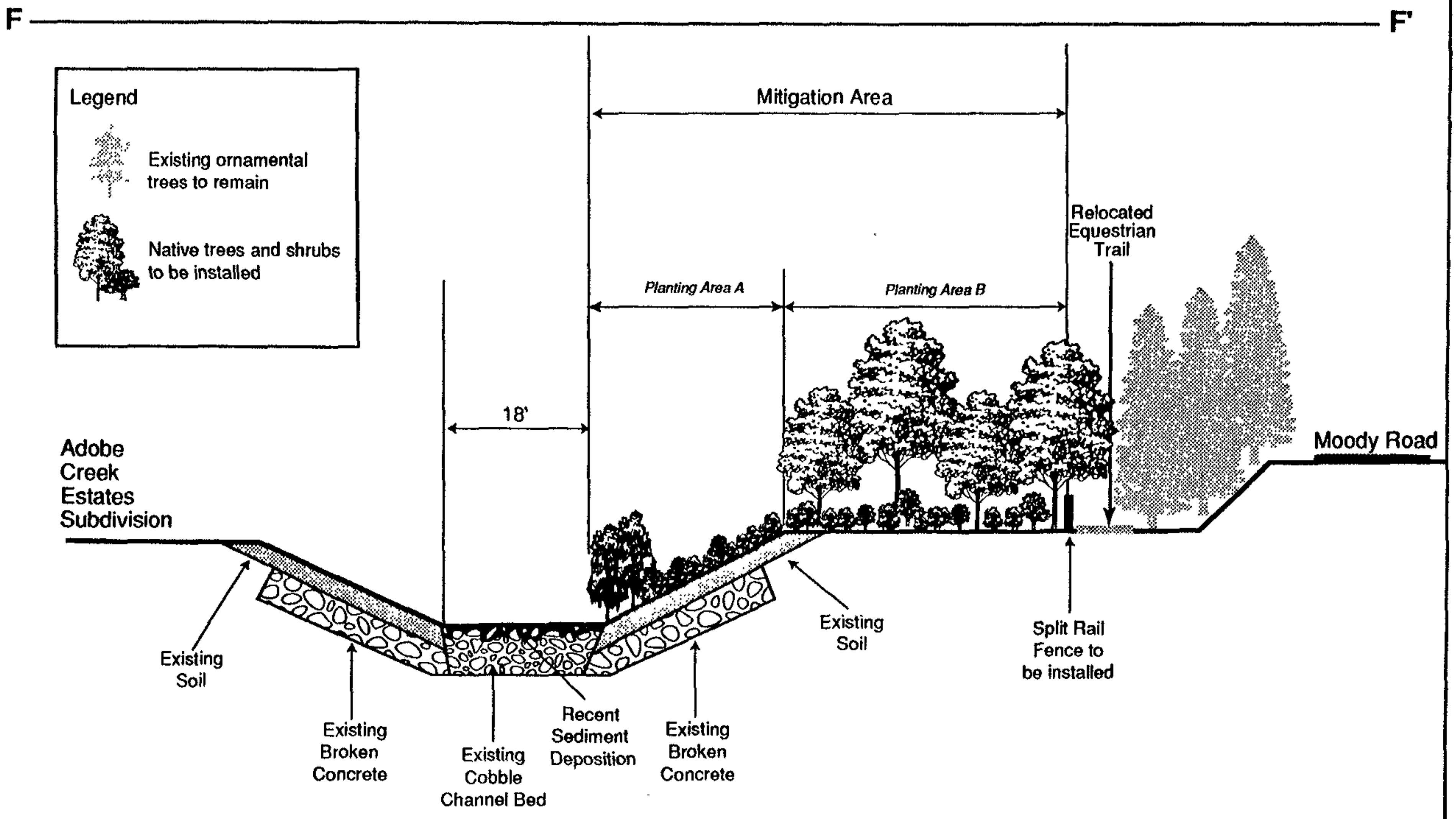
CROSS-SECTION OF ADOBE CREEK ESTATES MITIGATION SITE
(WEST OF ADOBE CREEK LODGE ROAD)

FIGURE 25



PLAN VIEW OF ADOBE CREEK ESTATES MITIGATION SITE
(EAST OF ADOBE CREEK LODGE ROAD)

FIGURE 26


F
F'
Legend
Existing ornamental trees to remain
Native trees and shrubs to be installed
Mitigation Area
Relocated Equestrian Trail
Planting Area A
Planting Area B
18'
Adobe Creek Estates Subdivision
Moody Road
Existing Soil
Existing Broken Concrete
Existing Cobble Channel Bed
Recent Sediment Deposition
Existing Broken Concrete
Existing Soil
Split Rail Fence to be installed

TYPICAL CROSS-SECTION LOOKING UPSTREAM

CROSS-SECTION OF ADOBE CREEK ESTATES MITIGATION SITE (EAST OF ADOBE CREEK LODGE ROAD)

FIGURE 27

Mitigation Site Planting, Maintenance and Monitoring

- The project would be required to provide a total of 2.6 acres of riparian habitat.

- The mitigation sites would be planted with native trees and shrubs from nursery stock or cuttings of local origin. Native grasses and wildflowers would also be sown on some sites. The final species selection would be determined during final mitigation design. The species that are most likely to be used are presented in Table 20.

TABLE 20
MITIGATION SPECIES

TREES		SHRUBS	
COMMON NAME	**SCIENTIFIC NAME**	**COMMON NAME**	**SCIENTIFIC NAME**
Coast live oak	*Quercus agrifolia*	California blackberry	*Rubus ursinus*
Valley Oak	*Quercus lobata*	Coffeeberry	*Rhamnus californica*
Mexican Elderberry	*Sambucus mexicana*	Toyon	*Heteromeles arbutifolia*
California Bay	*Umbellularia californica*	Common snowberry	*Symphoricarpus albus* var. *laevigatus*
California Buckeye	*Aesculus californica*		
California Sycamore	*Platanus racemosa*		
Fremont Cottonwood	*Populus fremontii*		
Red Willow	*Salix laevigata*		
Arroyo Willow	*Salix lasiolepis*		

- The trees would be installed on the sites in positions relative to each species' ability to withstand drought conditions. The more hydrophytic species, such as willow and cottonwood, would only be installed in areas where soil moisture is relatively high most of the year. The trees would be installed on 10-16 foot centers. The shrubs would be installed on six to eight foot centers. The final site design would specify the exact mitigation planting requirements. All of the sites would be fully planted to ensure that ultimately a complete tree canopy would be established.

- All of the mitigation areas would require maintenance for a three to five year plant establishment period. Maintenance may include plant irrigation, weeding, plant replacement, etc, as deemed appropriate by District Maintenance personnel and staff biologists. The District assumes responsibility for all maintenance activities until the site is approved as successful by the regulatory agencies (i.e., Corps, CDFG). Specific measures of success will be stated in the final mitigation and monitoring plan.

- A detailed monitoring plan including specific success criteria would be developed for the mitigation areas as part of the final mitigation and monitoring plan that would be submitted to the permitting agencies. The mitigation areas would be monitored in full accordance with the plan approved by those permitting agencies. The District assumes responsibility for all monitoring.

The basic components of the monitoring plan are final success criteria, performance criteria, monitoring methods, data analysis, as-built plans, monitoring schedule, contingency/remedial measures and reporting requirements.

The final success criteria define the long term goals for the site and will focus on percent vegetative cover and tree height. Performance criteria (which can include survival, percent cover, tree height, site maintenance, etc.) are quantitative benchmarks against which incremental revegetation progress will be tracked during the first years of site development. Trend characteristics (plant vigor/health, natural reproduction/recruitment, canopy stratification, and plant damage) are site characteristics to be monitored over time which have no fixed goals. Monitoring of the trend characteristics will provide valuable supplementary information concerning site development and will help guide maintenance activities and remedial action, if required. The specific success criteria and characteristics will be developed during the detailed site design phase.

At a minimum, the final success criteria will include absolute percent cover by native trees and shrubs of 50 and 30 percent, respectively. The performance criteria will include tree and shrub survival at two years of 80 percent, unless original planting density or other circumstances call for a different survival percentage. Additional detailed criteria will be provided in the final plans.

Monitoring will be conducted annually in Years 1-5 and in Years 7, 9 and 11. Annual monitoring reports will be sent to the appropriate agencies. By Year 11 the mitigation site should be sufficiently well established to determine if the risk of site failure is minimal and to show that the vegetation is growing at satisfactory rates. The results of the monitoring in Year 11 will be compared to the final success criteria to determine if these criteria have been reached.

SIGNIFICANT IMPACTS ASSOCIATED WITH RESURFACING OF SOIL CHANNEL BANKS

The loss of soil channel banks that would be resurfaced with gabions, riprap, SCSP, or geocell is significant because it could represent a loss of area that might otherwise be colonized by riparian vegetation. Therefore, this loss of potential riparian habitat would be mitigated in-kind by establishing new riparian habitat. The mitigation described above includes mitigation acreage for loss of soil channel banks. The implementation of that mitigation would reduce the impact to soil channel banks to a less-than-significant level.

With implementation of the above described mitigation, project impacts to vegetation and wildlife would be reduced to a less-than-significant level.

PRE- AND POST-PROJECT BIOTIC CONDITIONS SUMMARY

Table 21 provides an estimate of habitat acreages within the project sites before and after project construction.

TABLE 21
PRE- AND POST-PROJECT BIOTIC CONDITIONS SUMMARY (ACRES)

Habitat	**Pre-Project**	**On-site Post-Project**	**Offsite[**] Mitigation**	**Total Post-Project**
Mixed Riparian Forest	0.84	1.23	1.41	2.64
Landscaped/Non-native	1.85	2.11	0	2.11
Riverine	1.12	1.51	0	1.51
Developed Area	0.57	0	0	0
Culvert	0.53	0.81	0	0.81
Scrub	0.05	0	0	0
Total[*]	**4.06**	**4.15**	**1.41**	**5.56**

* Habitats overlap. Does not include general maintenance program.
** On Adobe Creek, but not at channel modification sites.

Mixed Riparian Forest Habitat. There is an increase in this habitat type's acreage in the post-project column due to the 0.9 acres of riparian mitigation that will be installed at the West Edith Avenue and Foothill College project sites. An additional 1.70 acres of riparian habitat is proposed at the Edith Park, Foothill Expressway and Adobe Creek Estates mitigation areas, which will ultimately bring the project's total riparian habitat acreage to 2.75, for a net gain of 1.82 acres. However, it must be understood that the mitigation sites will not provide full riparian habitat value for at least 15-25 years after site planting when they would provide habitat values equal to or greater than the areas originally impacted.

Landscaped/Naturalized Habitat. There is a net gain of 0.26 acres for this habitat type. This net gain is primarily the result of the West Edith overflow channel area and riprap and gabions within the project areas. The overflow channel, and riprap and gabions, to be installed by the project were included in this category because they will be subject to periodic maintenance by the District that will preclude the development of mature trees. It is recognized that some habitat value will be provided as vegetation that has been planted, seeded or has colonized the areas develops; however, no mitigation credit has been claimed.

Riverine. There is a net gain of 0.32 acres for this habitat type. This net gain is primarily due to widening of the creekbed at the Foothill College channel modification and culvert replacement sites. It should be noted that some of this increase represents minimal additional habitat value since, for example, the widening of a concrete culvert to a broader culvert provides little new habitat for wildlife. At Foothill College riverine habitat acreage will increase due to broadening of the creekbed and anticipated sedimentation and vegetation recolonization within the new channel. All areas where the creek channel is proposed to be modified, a low-flow fish channel will be added.

Developed Area. This 0.57 acre loss will occur at the Rogez property and the Foothill College parking lot.

Culvert and Transition Structures. The 0.28 acre increase in this category is due to widening of existing culverts. Note: Some of this category overlaps with the riverine habitat type, which also covers channel bed areas within culverts.

Scrub. This 0.05 acre loss will occur on the left bank at Foothill College.

Trees. The following tree protection measures should minimize impacts to these redwoods and other trees potentially impacted by the project: 1) Where feasible, prior to project construction at the site, measures such as orange safety fencing shall be installed around the dripline of the trees and maintained until completion of construction at the site. This measure will protect trunks from physical impact and avoid root severance and compaction. 2) Where fencing is not feasible, trunks shall be wrapped with furniture padding or be otherwise protected from equipment damage. If roots greater than 2" in diameter are damaged or cut, an arborist shall be consulted. Roots should be cut cleanly and smoothly without crushing, shattering, or tearing. Limbs greater than 2" in diameter and subject to removal shall be pruned just outside the branch collar. In addition, the trunks of the redwoods in question are located downstream of the transition structure that will be installed. Thus, the trunks will be outside the transition zone of impacts. Nonetheless, some roots and limbs may be trimmed during construction.

E. WATER QUALITY

1. EXISTING SETTING

The proposed project is located within and along the Adobe Creek channel. Discharges from this creek eventually drain into San Francisco Bay. Surface runoff channeled into the creek carries pollutants to the Bay, including sediments, motor oil, car exhaust, chemicals, eroded soil, detergents, paints, and other discarded material carried through the storm drain system. These sediments and pollutants build up and increasingly degrade the Bay's water quality and biological health.

Water quality degradation is regulated by the Federal National Pollution Discharge Elimination System (NPDES) Program, established by the Clean Water Act, which controls and reduces pollutants to water bodies from point and nonpoint discharges. The program is administered by the California Regional Water Quality Control Boards. The San Francisco Bay Regional Water Quality Control Board (RWQCB) issues NPDES permits for discharges to water bodies in the San Francisco Bay Area. NPDES permits are required for all projects disturbing greater than five acres of land during construction and for industrial and other major dischargers.

2. IMPACTS

For the purposes of this project, a water quality impact is considered significant if the project would:

- result in a substantial degradation of groundwater resources; or
- contaminate a public water supply; or
- cause substantial erosion or sedimentation into a surface water.

The proposed modifications along the Adobe Creek channel would expose bare soils and could result in increased erosion, turbidity, and sedimentation during construction. The increased sedimentation generated could degrade the quality of water in the creek and San Francisco Bay by transporting other pollutants adhered to sediments, or adversely affecting biological resources. The water quality impacts that could occur during construction of the proposed channel modifications represent a potentially significant impact. However, these impacts would be temporary in nature and would be reduced by the implementation of standard construction practices to minimize erosion. The Engineer's Report contains best management practices for the project that limit most potential impacts to water quality due to erosion and sedimentation. In particular, the report specifies that grading would only occur during dry months. The District would also recover or revegetate all exposed soil surfaces as work progresses. The purpose of the project is to correct existing flooding, erosion, and sedimentation problems along Adobe Creek.

The project proposes to repair 17 channel bank erosion sites and eight channel bottom erosion sites, as well as the eroding channel at West Edith Avenue and on the Foothill College property. These erosion repairs would reduce the amount of sediment introduced into the creek system over time and, therefore, improve water quality.

Construction of the project could result in potentially significant temporary water quality impacts. However, implementation of the best management practices outlined in the Engineer's Report would reduce potential water quality impacts to a less-than-significant level. In addition, the repair of erodible banks and installation of other creek and bank stabilization measures should reduce the quantity of sediment that erodes into the creek.

3. MITIGATION

As part of the District's NPDES Permit requirements, a Storm Water Pollution Prevention Plan (SWPPP) would be required for the proposed project. The SWPPP would identify storm water pollution prevention measures (control practices) to reduce pollutants in storm water discharges from the construction sites both during construction and after construction is completed (RWQCB NPDES Permit No. CAS029718). Potential water quality impacts resulting during project construction in the Adobe Creek channel (i.e., sedimentation and turbidity) would be reduced by the implementation of standard best management practices to minimize erosion, including the following:

- Project construction would only take place during periods of low creek flows.
- Project construction would include the implementation of temporary erosion control measures and a stormwater pollution prevention plan.
- Once construction is completed, the District would stabilize and/or revegetate the disturbed areas of the creek channel.

With implementation of the above mitigation, the potential water quality impacts of the project would be reduced to a less-than-significant level.

F. HAZARDOUS MATERIALS

This section is based upon a Phase I Hazardous Materials Assessment conducted for the project by Terratech, Inc. completed in January 1994. The objectives of this Phase I investigation were to identify existing and potential contamination sources, evaluate potential impacts to the project alignment, and develop recommendations for any further investigations that may be required to determine the extent of any subsurface contamination. A Phase II investigation was not conducted based upon the report's recommendation. A complete copy of this report is presented in Appendix E of this EIR.

1. EXISTING SETTING

The Phase I investigation consisted of the following tasks: 1) a review of ten regulatory databases to identify sites of potential environmental concern within a 0.5 mile radius of the alignment; 2) a review of historical aerial photographs; 3) a review of topographical maps; 4) a review of Sanborn Fire Insurance Maps; and 5) a review of City business directories, including the Haines Criss Cross Directory and Polk City Directories. In addition, a field reconnaissance of the entire creek channel was performed. Due to trespassing concerns, however, private properties adjacent to the creek channel were not fully investigated. Terratech also interviewed facility operators and other individuals with relevant knowledge of Adobe Creek (see Appendix E for a listing of the individuals interviewed).

REGULATORY DATABASE REVIEW

Ten regulatory databases were searched which identified sites of potential environmental concern within 1/2 mile of the Adobe Creek alignment. Table 22 lists the regulatory databases searched. These lists identified 22 total sites within 1/2 mile radius of the project, as presented in Table 23.

Six sites were determined not to pose significant environmental concern because they are either closed or listed as hazardous materials storage or generator sites only.

One site, the Hillview Maintenance Yard in Los Altos, is listed on the Comprehensive Environmental Response and Liability Information System (CERCLIS) list, and is located approximately 3,000 feet east of Adobe Creek. The site was found to contain 9.1 micrograms per liter (mg/l) of carbon tetrachloride in groundwater samples tested in July 1994, which exceeds the state action level of 5.0 mg/l. Since Adobe Creek recharges the underlying aquifer approximately 100-200 feet below ground surface in this area, it is unlikely that potential contaminated groundwater near the Hillview Maintenance Yard would impact the proposed project.

The remaining sites, which include service stations, leaking underground storage tank (LUST) sites, and an industrial facility, were also evaluated during the Phase I analysis. Thirteen of the 15 sites were determined to have a low potential to impact the project, based on agency file information, distance from the creek alignment, and local hydrogeologic conditions. The other two sites, Alta Mesa Cemetery and Foothill College, required additional investigation to determine the potential for hazardous materials contamination that could affect the project site. This additional investigation is discussed below. (For a more detailed discussion of each of the 20 identified sites, refer to Appendix E.)

AERIAL AND MAP REVIEW

A review of historical aerial photographs, topographic maps, and the Sanborn Fire Insurance Maps showed no evidence of storage tanks, ponds, wells, or other features of environmental concern along the project alignment. A map and directory review for the Cities of Los Altos, Mountain View, and Palo Alto identified several previous or existing service stations and dry cleaning businesses near the subject portion of the Adobe Creek alignment.

TABLE 22
REGULATORY LISTINGS SEARCHED

REGULATORY LISTING	TYPE OF RECORDS	AGENCY	REVISION
CERCLIS	Contaminated Sites under CERCLA	U.S. EPA	3/93
NPL	Federal Superfund Sites	U.S. EPA	10/92
LIENS	Filed Notices of Superfund Liens	U.S. EPA	9/91
CORTESE	Hazardous Waste and Substances Site List	CAL-EPA	11/92
CAL-SITES/AWP	Contaminated sites listed on the Annual Work Plan, and cleanup sites under the Bond Expenditure Plan	CAL-EPA	3/93
BZP	Sites Designated as Border Zone Properties (Deed Restrictions)	CAL-EPA	9/92
CAL-SITES/ASPIS	Actually or potentially contaminated sites under the Abandoned Site Program	CAL-EPA	9/92
HWIS	Hazardous Waste Generators, Treatment, Storage and Disposal Facilities	CAL-EPA	9/92
SWIS	Active and Inactive Sanitary Landfills and Disposal Facilities	California Waste Management Board	3/93
LUST	Leaking Underground Storage Tanks	San Francisco Bay Regional Water Quality Control Board	5/93

TABLE 23
FACILITIES IDENTIFIED ON REGULATORY LISTINGS

FACILITY/ ADDRESS	STATUS	LISTS
Los Altos Well Field (Hillview Maintenance Yard) Corner of Eleanor and Hillview Streets Los Altos APN 170-42-029	No action	CERCLIS, CAL-SITES (AWP), CAL-SITES (ASPIS)
SHELL 2595 California Mountain View APN 147-45-021	Active	CORTESE (underground tank and leaking tank databases), HWIS, LUST
TEXACO 334 South San Antonio Road Mountain View APN 147-39-043	Active	LUST, CORTESE (underground and leaking tank databases)
Victor's Goodyear 298 South San Antonio Road Mountain View APN 147-39-057	Closed	LUST
Villa Angela Property 11 Angela Drive Los Altos APN 170-43-058	Closed	LUST
CHEVRON 470 South San Antonio Road Los Altos APN 167-41-053	Active	CORTESE (leaking tank database), LUST, HWIS
UNOCAL/UNION OIL 330 San Antonio Road Los Altos APN 167-40-065	Active	CORTESE (leaking tank and underground tank databases), HWIS, LUST
ARCO/Lawrence Frugoli Property 988 San Antonio Road Los Altos APN 167-16-045	Active	CORTESE (leaking tank database), LUST, HWIS
CHEVRON 45 Main Street Los Altos APN 167-38-001	Closed	LUST
Brusie Property 67 Del Monte Los Altos APN 167-17-024	No action	LUST
CHEVRON 401 Main Street Los Altos APN 167-41-062	Active	CORTESE (underground and leaking tank databases), LUST, HWIS

TABLE 23
FACILITIES IDENTIFIED ON REGULATORY LISTINGS
(continued)

FACILITY/ ADDRESS	STATUS	LISTS
UNOCAL/Union Oil 4350 El Camino Real Los Altos APN 167-11-041	Active	CORTESE (leaking tank and underground tank databases), LUST, HWIS
Paddlesford Oldsmobile/Hudson #82 4230 El Camino Real Palo Alto APN 167-08-030	No action	CORTESE (leaking tank and underground tank databases), LUST
4201 Middlefield Road Palo Alto APN 147-05-086	Active	LUST
Carlsen Subaru 4190 El Camino Real Palo Alto APN 137-24-022	Generator	HWIS
Cymrot Property 12120 Edgecliff Place Los Altos Hills APN 336-28-019	No action	CORTESE (leaking tank database), LUST
Foothill College/El Monte Fire Station 12345 El Monte Road Los Altos Hills APN 175-41-010	No action, generator	HWIS, CORTESE (underground tank and leaking tank databases), LUST
Alta Mesa Memorial Park 695 Arastradero Road Palo Alto APN 167-03-019	No action	CORTESE (underground tank database), LUST
Fairchild 4001 Miranda Avenue Palo Alto APN 142-17-029	Closed	CERCLIS
Ferrari Property 25800 Altamont Road Los Altos Hills APN 182-17-047	Closed	LUST

FIELD SURVEY

A field survey of the project site was conducted in September 1993. Based upon observations made from the field reconnaissance and the regulatory records review, six areas were identified as potential contaminant sources and required additional investigation. These areas include Alta Mesa Cemetery, a septic leachate discharge near Morningside Private Drive, the maintenance yard at Foothill College, and a waste storage area and two landfills in the vicinity of The Trust for Hidden Villa.

AREAS OF POTENTIAL CONTAMINATION

Surficial soil or leachate samples were collected during the Phase I analysis to identify any potential contamination at the six suspect locations. The general locations of these sites are shown on Figure 28. For detailed location maps of the soil sampling locations please refer to Appendix E. The results of this investigation are summarized below.

Alta Mesa Cemetery (Station 277+00 to Station 312+00)

The Alta Mesa Cemetery is located along the entire right bank of Reach 2 between Stations 277+00 and 312+00. The site contains two diesel underground storage tanks (USTs) and one gasoline UST. Vadose (vapor monitoring) wells near the USTs are monitored monthly for the presence of petroleum hydrocarbon vapors. The site is listed in the LUST database due to a single incident of elevated hydrocarbon vapors detected in a vadose well. Subsequent vapor monitoring did not detect elevated levels of petroleum hydrocarbon vapors.

A file review of Palo Alto Fire Department files revealed that a small hydraulic oil spill occurred onsite in 1990. Impacted soil was cleaned up to a level of less than 100 parts per million (ppm) of total petroleum hydrocarbons (TPH) in the soil.

A waste storage area containing general debris and empty drums is also located near the Alta Mesa property along the right bank of Adobe Creek. A composite soil sample was collected downhill from the waste storage area, near the top of the creek bank. The sample was collected from two locations. Concentrations of metals appeared to be well within naturally occurring background levels. Low levels of TPH (17 ppm) were detected in the sample. No Volatile Organic Compounds (VOCs) were detected in the sample. The results of the samples indicate that contamination is not presently a problem on this site.

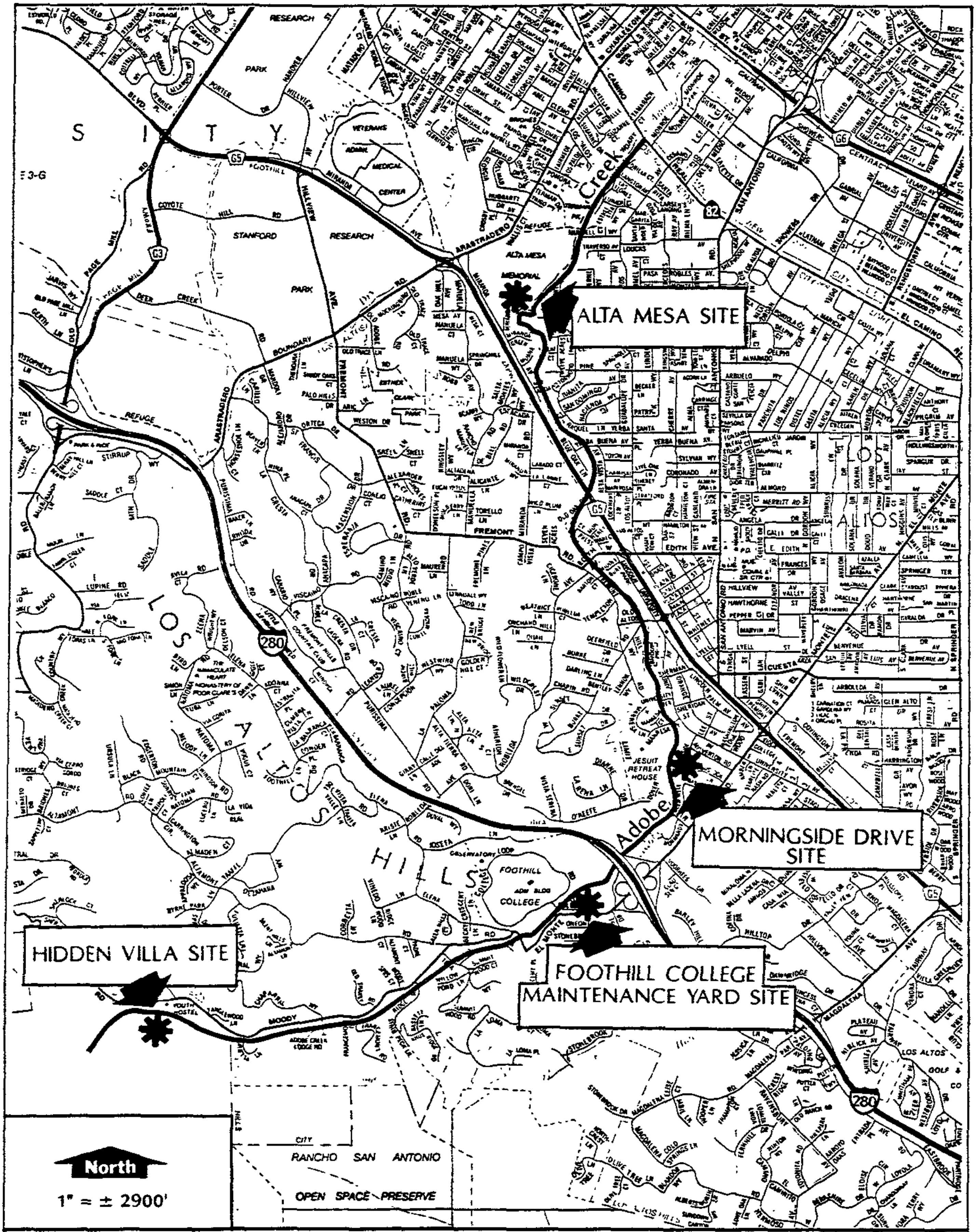
Morningside Private Drive (Station 468+00)

During the initial Phase I survey in September 1993, a strong sewage odor was detected within Reach 8 near Morningside Drive (Station 468+00). During a subsequent inspection in October 1993, a 6-inch partially buried pipe was observed on the left bank of Adobe Creek, draining liquid into the creek bed. A sample of this liquid was collected and analyzed for fecal coliforms. The fecal coliform test was positive, which indicated the presence of septic leachate. Though fecal coliform are also present in the feces of warm blooded animals, the strong sewage odor observed in combination with the outfall pipe and knowledge of a septic leach field directly up the bank, confirm that the leachate was septic in nature.

On January 3, 1994, the District notified Mr. Dave Whitman of the Santa Clara County Environmental Health Department of the presence of fecal coliforms in the leachate. The District believes that the County Environmental Health Department is currently taking appropriate action to correct the problem.

Foothill College Maintenance Yard (Station 508+00)

The Foothill College Maintenance Yard is located along the left bank of Adobe Creek within Reach 11 near Station 508+00. The yard contains a paint shop, vehicle maintenance and fueling facilities, storage buildings, and two wash racks. The site is included on the Hazardous Waste Information Systems and Hazardous Waste and Substances Sites Lists, due to the generation of



SOIL SAMPLING LOCATIONS FIGURE 28

hazardous wastes on site, including waste oil, batteries, and used filters. It appears that liquids generated at the wash rack and all hazardous wastes are disposed of appropriately, and secondary containment is provided at most of the hazardous waste storage areas and regulated by the State.

A 6,000-gallon gasoline UST is located in the maintenance yard. The tank site is monitored monthly by a vadose well at the tank site. A tank containing asphalt sealant was removed from Foothill College in 1987. Verification samples detected low levels of TPH in the soils, and the site has been placed on the LUST database.

Mr. Bill Schooler, maintenance supervisor at Foothill College, reported that the paint shop burned down in November 1990. Fire-fighting water was contained and disposed of off site. A composite soil sample was collected between the former paint shop and the creek channel to determine if routine maintenance yard activities or the paint shop fire have impacted the soils. The composite sample was collected from two locations, showing concentrations of metals within normal background levels. Low levels of TPH (25 ppm) were detected in the sample. No polynuclear aromatics (PNA) or VOCs were detected in the soil sample.

The Trust for Hidden Villa - Waste Storage Area and Two Landfills (Station 613+00 to Station 633+00)

The Trust for Hidden Villa is a nonprofit corporation comprised of a farm, a visitor's center, and a youth hostel, located within Reach 16. The Trust for Hidden Villa maintains a waste storage and recycling area near Station 633+00 on the left side of the creek. At the time of the survey (January 1994), the area contained a waste dumpster, recycling bins, and 29 55-gallon drums. Most of the drums were empty, but two of the drums labeled "Calgon Car Wash Hot Wax" were partially filled. Soil staining was observed east of the drums, away from the creek. The 55-gallon drums are leftovers from horse show days at The Trust for Hidden Villa, when they were used for horse jumping. The Trust for Hidden Villa intends to remove all of the debris there and in the landfill when they have raised the funds to do so.

Two soil samples were collected near the top of the creek bank, immediately downslope of the drum storage area. Concentrations of metals appeared to be within normal background levels. Low levels of TPH (25 ppm) were detected in the sample. No PNAs or VOCs were detected in the soil sample.

Two old landfills were observed along the creek banks near The Trust for Hidden Villa. The first landfill was located along the left bank between Stations 613+00 and 614+00. Landfill debris included refrigerators, water heaters, automobile parts, and scraps of wood and metal. The landfill appeared to be very old due to severe rusting of metal debris. A second landfill was located along the right bank between Stations 626+00 and 627+00. This landfill contained cans, bottles, and miscellaneous wood and metal debris. No odors or evidence of staining were observed at either landfill. The landfill located along the right bank was cleaned up in the summer of 1995.

Three soil samples were collected near the toe of each landfill and were composited into a single sample for each landfill area. Concentrations of metals at both locations appeared to be within normal background levels. Low levels of TPH (between 6-15 ppm) were detected in both samples. No PNAs or VOCs were detected in either soil sample.

The remaining landfill along the left creekbank is located near the downstream end of The Trust for Hidden Villa mitigation site. The landfill does not appear to extend into the mitigation site. Since the mitigation area would not be graded the landfill would not be disturbed and it is not considered a site constraint.

CREEK SEDIMENTATION

The project includes creek modifications which would require the excavation and removal of sediments. It is possible that some of these sediments may contain unknown concentrations of hazardous materials deposited from nearby or upstream sources. The specific location and quantity of sediments to be removed from the creekbed and embankments has not yet been determined. Prior to construction, soil profiling of all materials to be excavated would be done. A creekbed sediment sampling program has been conducted by the District to characterize sediment deposition in the creek channel and to evaluate the chemical nature of sediment loading to the San Francisco Bay. The purpose of this study was to look for nonpoint source pollutants in creekbed sediments. It was not intended to be used for the soil profiling. The results of the sediment characterization are presented in the Engineer's Report.

2. IMPACTS

For the purposes of this project, a hazardous materials impact is considered significant if the project would:

- expose construction workers, employees, and the public to a significant risk associated with the storage, use, and disposal of hazardous materials on the site or from existing hazardous materials contamination on the site.

Based on the results of the regulatory database search and field investigation, it is unlikely that any of the sites identified in the database currently present hazardous materials impacts to the Adobe Creek alignment.

Based on the soil sampling results and a review of existing information, it appears unlikely that conditions at Alta Mesa Cemetery (Stations 277+00-312+00), the Foothill College Maintenance Yard (Station 508+00), or at either the waste storage area or the landfill near The Trust for Hidden Villa property (Stations 613+00-633+00) pose an environmental threat to the soils, surface water, or groundwater of the Adobe Creek alignment.

As part of this study fecal coliforms were identified in septic leachate discharged from a pipe into the creek bed near Morningside Private Drive (Station 468+00). This issue was addressed and corrected by the Santa Clara County Health Department.

Based on the conclusions of the Phase I analysis prepared by Terratech, Inc., it is determined that the project area has a low likelihood of being impacted by any of the known, nearby contaminated sites.

The District plans to sample and analyze those soils to be excavated in order to determine the chemical nature of the soils to be generated by the construction project and to determine disposal and reuse options. This is necessary because local Class III landfills have specific requirements as to the chemical composition of acceptable soils.

Based on the above discussion, the project is not expected to result in any significant hazardous materials impacts.

3. MITIGATION

Although the project would not result in significant hazardous materials impacts, the following mitigation measures are recommended to further ensure that the areas identified as potential sites of concern do not impact the proposed project.

- The domestic landfill located near The Trust for Hidden Villa property (Stations 613+00-614+00) would be removed from the creek bed by the District prior to project construction, if excavation is proposed in this area.

- The septic leachate discharge site near Morningside Private Drive (Station 468+00) would be periodically inspected by the District to ensure that there is no sewage odor and that no leachate is being discharged from the pipe.

- Prior to construction, soil profiling will be conducted to characterized the Adobe Creek sediments and embankment soils to be excavated in order to determine soil reuse and disposal options.

Implementation of the above mitigation would further minimize any potential hazardous materials impacts of the proposed project.

G. CULTURAL RESOURCES

This section is based on an archaeological field inspection and archival search of the project site conducted in April 1994, by Archaeological Resource Management. A copy of the complete report is presented in Appendix F of this EIR. This investigation included a review of maps and records on file at the California Archaeological Inventory located at Sonoma State University, and a surface reconnaissance of the project alignment.

1. EXISTING SETTING

There are two recorded archaeological sites located in the project area. These sites are located within an existing housing development, and have been previously disturbed. Prehistoric cultural material was encountered at these two sites along the east side of Adobe Creek, between O'Keefe Lane and a portion of the creek adjacent to Milverton Avenue. Both sites contain cultural materials which extend to the current creekside. Additional cultural materials were found scattered between the two sites, suggesting a relationship between the two areas, and the possibility that the sites are actually one continuous site.

There are two additional recorded sites located in the vicinity of the project area. The first site, an archaeological site, is located near the creek in an area covered by vegetation. Survey of this site failed to reveal any indication of archaeological materials; however, visibility in this area was poor due to dense vegetation. The second site is an historic property located on the grounds of Foothill College. The site contains a brown-shingled home and carriage house built in 1901. The house, owned by Willard Griffin, was nominated to the *National Register of Historic Places* (1979).

2. IMPACTS

For the purpose of this project, a cultural resource impact is considered significant if the project would:

- cause a substantial adverse change in the significance of a historic resource; or
- cause damage to an important archaeological resource; or
- substantially conflict with an established recreational, educational, or scientific use of an area.

Although much of the project would have no impact on cultural resources, the project could impact two archaeologically sensitive sites located between O'Keefe Lane and Milverton Avenue within the project boundary. The erosion repair site proposed in this reach of the Adobe Creek channel would not affect any cultural resources that may be present, because no excavation is proposed. The project proposes only to install rock at the toe of slope. Future maintenance activities, however, could potentially impact the two archaeologically sensitive sites within the project area, if excavation of the bank is required.

Given the presence of known cultural resources in and adjacent to the project area, there is a potential for future channel maintenance activities to impact cultural resources. It is recommended that a qualified archaeologist monitor the four areas identified in the cultural resources investigation, where known archaeological or cultural resource sites occur within and adjacent to the project area. A qualified archaeologist would monitor all four areas during project construction.

The project would result in a potentially significant impact on cultural resources within the project area.

3. MITIGATION

- If future maintenance activities require excavation of the channel bank in either of the two sensitive areas near O'Keefe Lane and Milverton Avenue, an archaeological testing program would be conducted by a qualified archaeologist, prior to construction. This testing would better define the boundaries of the midden areas and provide subsurface data on archaeological deposits. If significant cultural resources are found during the testing program, all recommendations of the archaeologist would be followed, which may include the analysis of recovered materials, laboratory cataloging, and a report of findings.
- The four areas of potential cultural resources identified in the cultural resources investigation would be monitored by a qualified archaeologist during project construction.
- In the event that prehistoric or historic resources (human remains, artifacts, concentrations of shell/bone/rock/ash, dishware) are encountered during construction or maintenance activities, all construction and maintenance within a fifty meter radius of the find would be stopped, the District notified, and an archaeologist retained to examine the find and make appropriate recommendations. The District will follow the

archeologist's recommendations to reduce impacts to cultural resources to a less-than-significant level.

With implementation of the above mitigation, potential impacts to cultural resources would be reduced to a less-than-significant level.

H. VISUAL AND AESTHETICS

1. EXISTING SETTING

The visual and aesthetic character of the project site varies along Adobe Creek. The creek ranges from an undeveloped earthen channel to a gunite or concrete-lined channel. The channel contains several creek crossings for roadways, including culverts and bridges. In some areas, the creek has been modified by erosion repair structures, such as sacked concrete slope protection, gunite-lining, gabions, geocell, and wooden and concrete walls. Vegetation along the project portion of the creek ranges from a natural and relatively undisturbed riparian forest to highly disturbed.

Adobe Creek is generally surrounded by open space in the upper watershed, low density residential development in the foothills, and medium density residential development on the Santa Clara Valley floor. Adobe Creek flows through mostly residential areas of the Cities of Los Altos, Mountain View, Palo Alto, and the Town of Los Altos Hills (refer to Figure 2). Other sensitive uses along the creek include Alta Mesa Cemetery, Terman Park, the Jewish Community Center (formerly Terman School), Shoup Park, the Redwood Grove Natural Preserve, a neighborhood park near West Edith Avenue, and The Trust for Hidden Villa property.

Because the project does not involve substantial development in the majority of the creek channel, the visual impacts would be minimal. The three areas that would undergo the greatest physical changes are located at West Edith Avenue (Reach 5), Foothill College (Reach 11), and at El Camino Real (Reach 1). A brief description of the visual characteristics of these areas is provided below.

WEST EDITH AVENUE (REACH 5)

The existing visual character of the West Edith Avenue project area is that of a narrow, highly modified channel. In some areas there is gunite on the left bank and wooden walls on the right bank, while other areas have wooden walls on both the right and left banks. Some portions of the reach have a concrete block wall on the left bank and there are portions of the reach that have formed concrete on the right bank (refer to the photos presented in the Engineer's Report). Mature trees grow behind the wall and above the gunite, which provide some shading of the channel. In some areas of the left bank, there is a wire fence with wooden support posts above the gunite.

FOOTHILL COLLEGE (REACH 11)

The existing visual character of the Foothill College area is that of a gunite-lined, somewhat trapezoidal channel that lies between a small hill and Foothill College Parking Lot A.

Vegetation consisting of grasses and trees exists on the channel banks, above the top of the gunite.

EL CAMINO REAL (REACH 1)

The existing visual character of the culvert site and upstream transition is that of a narrow concrete lined channel. This concrete and sack concrete slope protection lined channel extend for approximately 200 feet upstream. There are some mature trees mostly planted at the top of the bank which provide some shading of the channel. At the top of both banks, there is a chain link fence for safety reasons.

2. IMPACTS

For the purpose of this project, a visual and aesthetic impact is considered significant if the project would:

- substantially alter the visual character of the area; or
- remove or substantially alter an important scenic or aesthetic resource; or
- substantially block existing views of scenic vistas or resources; or
- produce substantial light or glare, such that it poses a hazard or nuisance.

The project is not anticipated to result in significant visual impacts along the majority of the Adobe Creek channel because the project does not involve the development of structures that would block existing views, substantially alter important scenic resources, or produce substantial light or glare. The majority of the culvert replacements, erosion repair, and maintenance work would occur below the top of bank, and therefore, would not be visually obstructive. In addition, the proposed activities would not result in the removal of a significant amount of vegetation. In many areas, the project would improve the visual character of the creek channel by removing dilapidated erosion repair structures.

The three areas of the project that would undergo the greatest visual changes are located at West Edith Avenue (Reach 5), Foothill College (Reach 11), and at El Camino Real (Reach 1). Figures 29 and 30, respectively, present photo-simulations of the proposed modifications at West Edith Avenue and at Foothill College.

WEST EDITH AVENUE (REACH 5)

The proposed project at West Edith Avenue consists of widening the existing channel bottom to 10 feet, installing gabions on the left channel bank and rock riprap on the channel bottom and right bank. The project also proposes to excavate a 10-foot wide mid-bank bench and a 64-foot wide, high flow earthen floodbench above the right bank.

The proposed measures at West Edith Avenue would alter the configuration of the Adobe Creek channel, from a narrow channel with a wooden wall located on the right bank, to a low flow channel with a wide earthen flood bench. The replacement of the existing wooden wall with a wide floodbench would change the existing narrow, chute-like character of the channel, but is considered to be an aesthetic benefit. Vegetation removed by the project from the left bank (on the Rogez property) would result in a temporary loss of visual screening for the Cypress Court residents along the opposite creek bank. Existing views of trees and other vegetation would be replaced with views of the rock riprap and earthen flood bench for a period of approximately five years, as the mitigation plantings begin to grow and screen the view. The project would result in no net loss of vegetation. For the reasons described above, the modifications proposed in this area are not anticipated to result in significant visual impacts. A photo-simulation of the proposed West Edith Avenue modifications is shown on Figure 29.

FOOTHILL COLLEGE (REACH 11)

The proposed project at Foothill College consists of installing gabions on the left bank and right bank for six feet up the banks, and rock riprap on the channel bottom. Above the gabion channel would be earthen high flow benches to be planted. The project also proposes a new maintenance ramp on the right bank, opposite the exit of the bypass channel (refer to Figure 5). This would include constructing a drop structure in the channel at the bypass exit to facilitate the scouring of sediment from the bypass channel.

Although the proposed measures would alter the existing configuration of the channel dimensions, the project would not be visually intrusive. The project would provide revegetation to mitigate for the removal of existing vegetation on the high flow benches. In addition, the replacement of gunite with gabions is considered to be a beneficial aesthetic impact because gabions allow for some vegetation growth within and between the gabion baskets. For the reasons described above, the project would not result in significant visual impacts in this area. A photo-simulation of the proposed Foothill College modifications is shown on Figure 30.

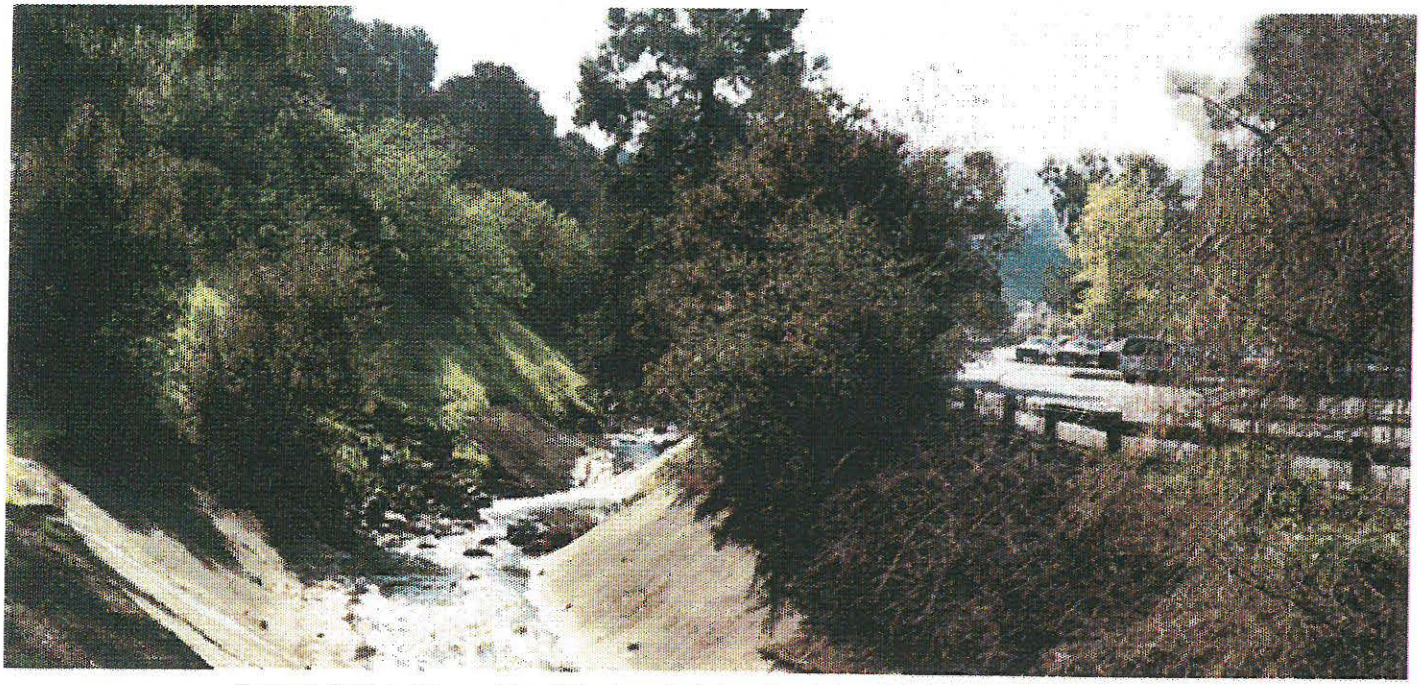
EL CAMINO REAL (REACH 1)

The project proposes to replace the existing culvert and rebuild the upstream transition between the culvert and the creekbed. The existing upstream concrete transition will be replaced with a gabion transition, which will be extended upstream to stabilize the existing maintenance ramp on the left (east) bank. The proposed culvert will be designed in conformance with the City of Palo Alto's "Palo Alto Gateway" plan (the details of which are still under development by the City of Palo Alto). Under existing conditions, the first 200 feet upstream of the culvert is mostly lined with concrete. In an effort to reduce impacts at this location, District engineers redesigned the project to decrease the original culvert replacement impact area. The proposed gabions will include planting "pockets" and areas at the top of bank that can be planted with riparian species. For these reasons, the project is not expected to result in significant visual impacts at the El Camino Real culvert.

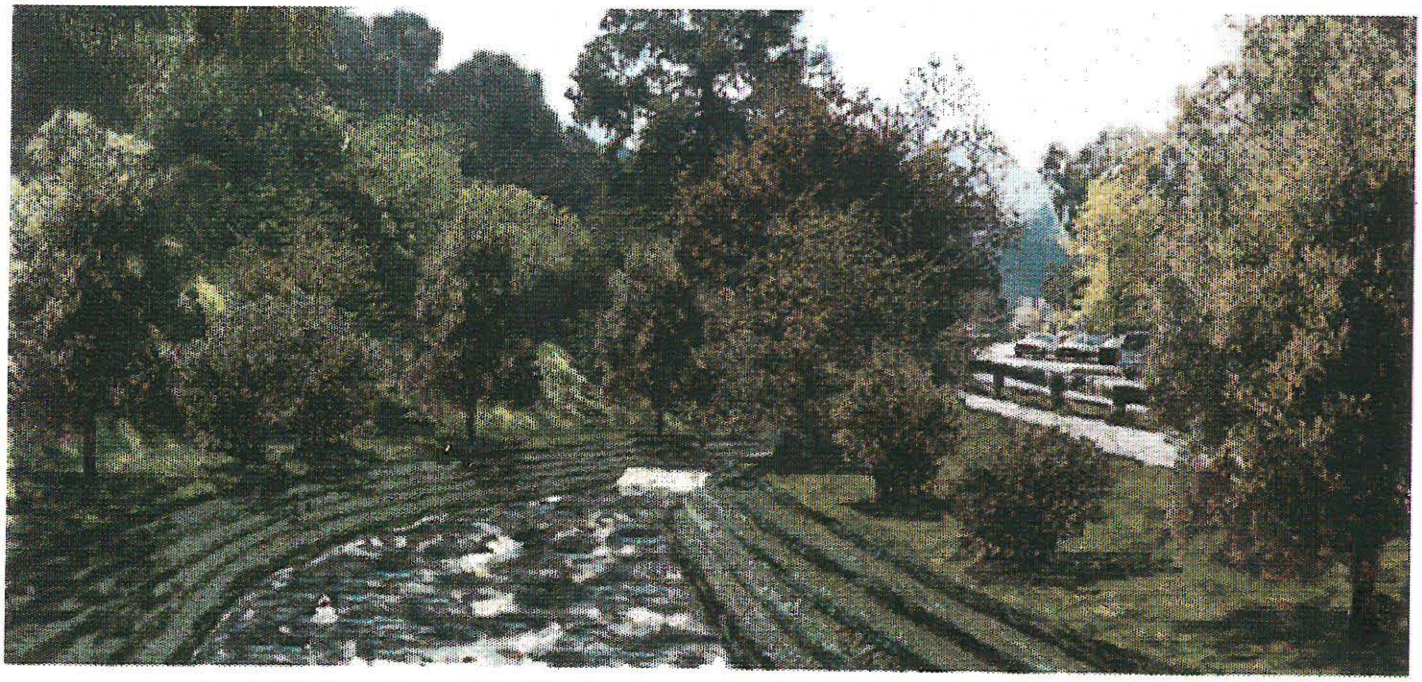
Based upon the above discussion, the project would not result in significant visual impacts *that would require mitigation beyond what is being provided to address riparian impacts.*

3. MITIGATION

- *No mitigation required.*



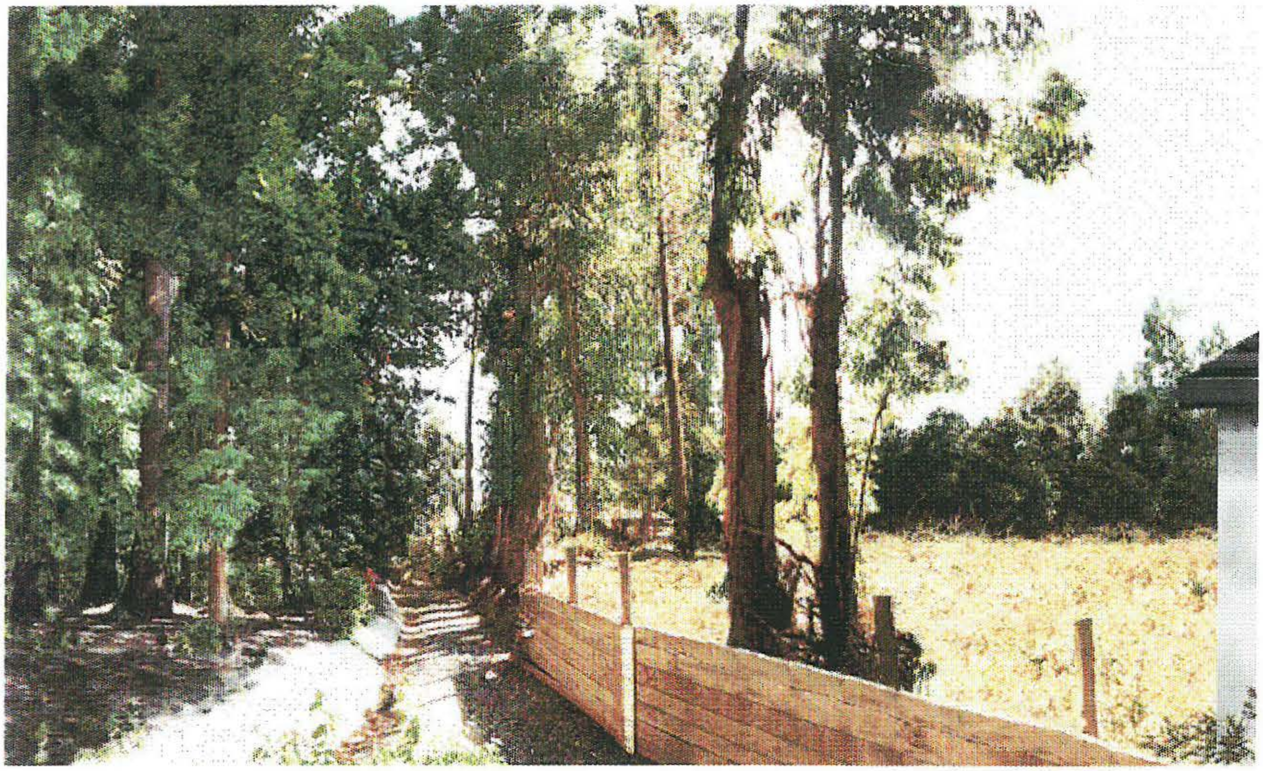
Foothill College Channel Modification- Existing Conditions (Artist's Photocomposite)



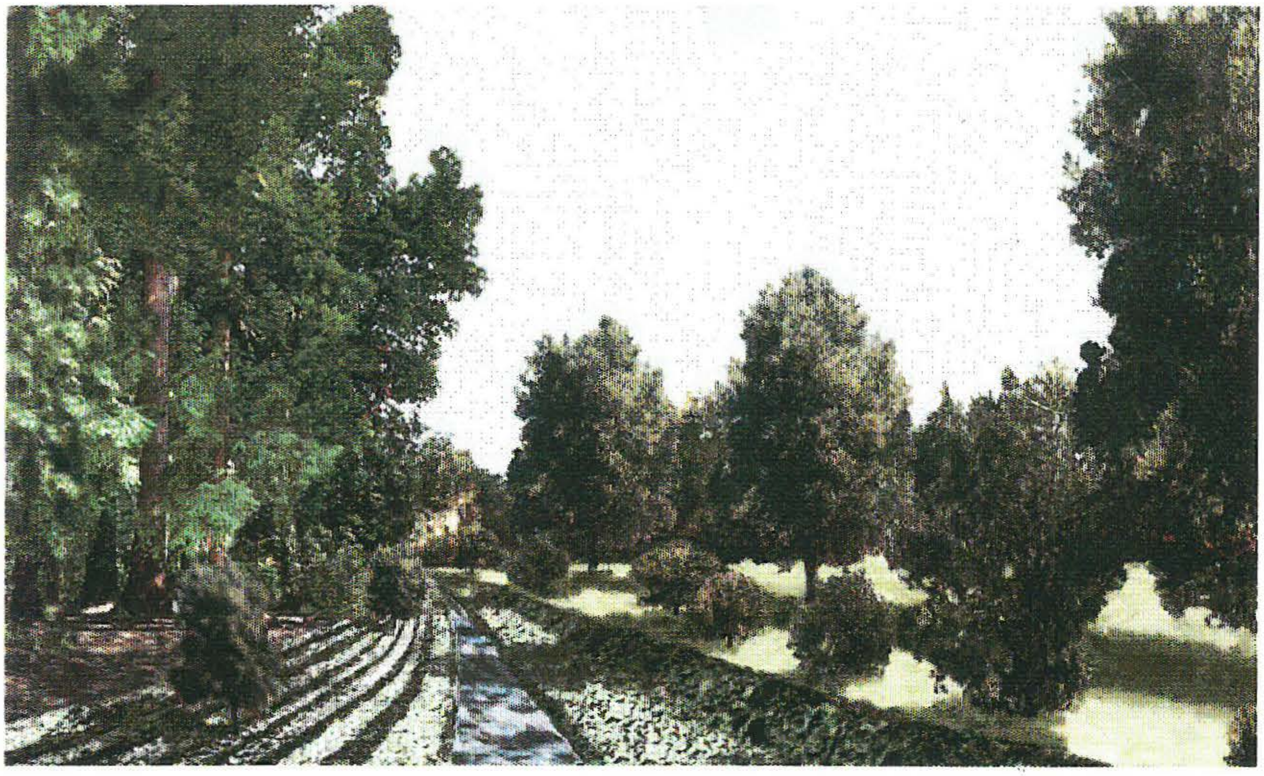
Foothill College Channel Modification- Post Project Conditions (Artist's Computer Rendering)

PHOTO SIMULATION OF PROPOSED MODIFICATIONS
AT FOOTHILL COLLEGE

FIGURE 30



W. Edith Avenue Channel Modification- Existing Conditions (Artist's Photocomposite)



W. Edith Avenue Channel Modification- Post Project Conditions (Artist's Computer Rendering)

PHOTO SIMULATION OF PROPOSED MODIFICATIONS
AT W. EDITH AVENUE

FIGURE 29

I. CONSTRUCTION-RELATED IMPACTS

1. EXISTING SETTING

The proposed channel modifications would take place along the upper portion of Adobe Creek. Although the environment and surrounding conditions at the specific modification sites vary, the subject portion of Adobe Creek is generally located in a residential, urbanized area. Many residences directly border the creek channel. A list of the properties that would likely experience temporary damage or disturbance is presented in Table 24.

2. IMPACTS

The majority of the impacts associated with the project would be construction-related, occurring over the short-term while the improvements are implemented. These activities include the replacement of culverts, placement of erosion protection, and the installation of maintenance ramps. Construction would be phased over a period of a few years. The precise duration of project construction is not known at this time but is currently projected to occur over four years.

The short-term impacts of construction generally fall into two categories: 1) construction nuisances (such as traffic, noise, dust, vibration and privacy impacts); and 2) the physical effects on adjacent properties from project construction activities (such as property damage and vegetation removal).

TEMPORARY TRAFFIC IMPACTS

For the purpose of this project, a traffic impact is considered significant if during construction activities the project would:

- cause an increase in traffic which is substantial in relation to existing traffic load and capacity of the street system; or
- result in potentially unsafe conditions (at an intersection).

The project would not result in an increase in traffic and would not result in potentially unsafe conditions. Any truck trips associated with project construction would avoid neighborhood streets to the greatest extent feasible, except where a local street may need to be traversed to access a site. The majority of the construction traffic trips would be associated with the main work sites, which would be accessed by major roadways.

Construction of the proposed box culverts under the major roadways could affect traffic in the short-term. Construction would require modification of traffic circulation on the following roadways: El Camino Real, Yerba Buena Avenue, Foothill Expressway, Burke Road, O'Keefe Lane, and Tepa Way. Construction of the culverts would be completed in two phases. This would allow at least one travel lane in each direction to remain open throughout construction activities, although traffic may be rerouted within the street's right-of-way.

The most substantial temporary traffic impacts would occur on El Camino Real, which carries high volumes of daily vehicle traffic. Traffic in the existing six lanes would be temporarily rerouted into the space currently occupied by three lanes, the median, and the parking lane along one side of El Camino Real. This would require the closure of the sidewalk on alternate sides

TABLE 24
PROPERTIES POTENTIALLY AFFECTED BY PROJECT CONSTRUCTION

Property Owner	Property Address	Assessors Parcel Number
El Camino Real Culvert Replacement		
Webster	4290 El Camino Real, Los Altos	167-10-87
4290 El Camino Properties LP (Cabaña Hotel)	4290 El Camino Real, Palo Alto	167-9-4
Alta Mesa Cemetery Ramp		
Alta Mesa Cemetery	695 Arastradero Road, Palo Alto	167-3-19+
Yerba Buena Culvert Replacement		
Beck	445 Yerba Buena Avenue, Los Altos	167-33-16
Pearl	444 Yerba Buena Avenue, Los Altos	167-33-53
Baer	357 Blue Oak Lane, Los Altos	167-34-1
Mitchell	341 Blue Oak Lane, Los Altos	167-34-21
Foothill Expressway Culvert Addition		
Kaye & Gershuny	401 Maraposa, Los Altos	167-35-3
Ornstein	240 Alta Vista, Los Altos	167-34-22
Sarpa	400 Old Oak Court, Los Altos	175-11-48
West Edith Avenue Channel Modification Work		
Remmel	11 Cypress Court, Los Altos	175-11-46
Lippe	9 Cypress Court, Los Altos	175-11-45
Vargas	7 Cypress Court, Los Altos	175-11-44
Wentz	5 Cypress Court, Los Altos	175-11-43
Wittner	3 Cypress Court, Los Altos	175-11-42
Paoli	420 Cypress Drive, Los Altos	175-11-29
Levis	412 Cypress Drive, Los Altos	175-11-27
Millar	400 Cypress Drive, Los Altos	175-11-28
Moos	25661 Fremont Road, Los Altos	175-10-15
Rogez	25561 Fremont Road, Los Altos	175-25-52

TABLE 24
PROPERTIES AFFECTED BY PROJECT CONSTRUCTION (CONTINUED)

Property Owner	Property Address	Assessors Parcel Number
Burke Road Bridge Replacement		
Greschke	220 University Avenue, Los Altos	175-12-20
Ahrens	13711 Old Altos Road, Los Altos	175-25-61
Carsten	232 Burke Road, Los Altos	175-13-1
Bowers	13730 Burke Road, Los Altos	175-28-18
O'Keefe Lane Culvert Replacement		
Sloss	12787 Normandy Lane, Los Altos Hills	175-40-26
Hatch	25000 O'Keefe Lane, Los Altos Hills	175-39-15
Foothill College Channel Modification		
Foothill Community College	12345 El Monte Road, Los Altos Hills	175-41-10+
Tepa Way Culvert Replacement		
Yochem	12264 Tepa Way, Los Altos Hills	336-30-11
Harris	12243 Tepa Way, Los Altos Hills	336-30-15
Bypass Entrance Modification		
Mercer	25567 Willow Pond Lane, Los Altos Hills	336-30-49

of the street during construction. After one side of the culvert is completed, the same procedure would be followed for the other side. This same procedure would be followed for all culvert replacement sites.

While the rerouting of the traffic lanes and the temporary loss of street parking would somewhat impact traffic on the roadways where culvert replacements are proposed, this impact is not considered to be significant, since it would be of a short-term nature and would not reduce capacity during construction with implementation of the measures described above. Other methods of construction that may have less traffic impacts will be considered at the project design phase. These methods are discussed in **Section I., D., Description of the Proposed Project**, of this EIR.

Construction of the proposed channel modification work at the Foothill College campus may increase congestion in the parking lot area.

Based upon the above discussion, the project would not result in significant short-term traffic impacts.

TEMPORARY AIR QUALITY IMPACTS

For the purposes of this project, an air quality impact during construction activities is considered significant if the project would:

- result in exceedance of Federal or State air quality standards; or
- result in exceedance of the suggested thresholds of significance of the Bay Area Air Pollution Control District for all criteria pollutants (e.g., 150 lb/day ROG, NOx, SOx, 550 lb/day for CO); or
- contribute substantially to an existing or projected air quality violation; or
- generate substantial amounts of dust during construction (82 lb/day of PM-10).

The project would not generate air pollutant emissions or increase the number of vehicle trips or vehicle miles traveled over the long-term, since it does not propose any new development or expansion of existing development. However, the construction of the channel modifications would result in temporary vehicle emissions from trucks, bulldozers, and other gas-powered construction equipment. Since project construction would be limited and temporary, any truck trips associated with the project would not result in significant air quality impacts.

During project construction, temporary increases in dust emissions would occur from the movement of earth and structural materials. The control and prevention of excessive dust would be accomplished through the watering of earth materials during construction activities, which is a standard construction management practice. Therefore, potential dust emissions are not expected to be significant.

Based on the above discussion, construction of the project would not result in significant temporary air quality impacts.

TEMPORARY NOISE IMPACTS

For the purposes of this project, a noise impact during construction activities is considered significant if the project would:

- result in a substantial change in the character of the noise environment; or
- result in a 5-dBA increase in ambient noise level in an area considered acceptable for its given use; or
- result in a 3-dBA increase (i.e., the threshold of noticeable change) in ambient noise level in an area already considered noise impacted; or
- if the project-generated noise would result in a conflict with established plans and policies

The proposed project would not result in long-term noise level increases, since it does not propose any new development or expansion of existing development.

The construction of the proposed modifications would result in short-term noise impacts upon surrounding residential land uses at some locations from construction equipment. The use of heavy equipment would result in high noise levels adjacent to the construction sites. A list of the noise levels from typical construction equipment is provided in Table 25, below. The noise levels listed in Table 25 assume that the receiver is 25 feet from the construction equipment. It should be noted that there is a 6dB reduction in noise level for every doubling of distance. For example, at 25 feet from a backhoe/gradeall, the typical noise level would be 78-99 decibels. At 50 feet from the same backhoe/gradeall, the noise level would be 72-93 decibels, and at 100 feet from the backhoe/gradeall, the noise level would be 66-87 decibels.

In areas where construction would take place near residential backyards, temporary noise impacts from the project would occur. This construction noise could adversely affect both residents and their pets. These noise impacts would be potentially significant for the duration of construction. However, due to the short-term nature of the construction impacts and the proposed measures to reduce construction noise where possible, the noise impacts of the project are not considered significant.

Based upon the above discussion, the project would not result in significant construction-related noise impacts due to their short-term nature.

TABLE 25
TYPICAL NOISE LEVELS OF CONSTRUCTION EQUIPMENT[9]

Equipment	Noise Levels at 25 Feet (decibels)
Backhoes/Gradeall	78-99
Loaders	78-90
Dump Trucks	89-100
Cement Trucks	89-100
Chain Saws	90-100
Pavement Breakers	82-92
Jackhammers	88-103
Pile Drivers	100-110

PROPERTY DAMAGE IMPACTS

The District typically uses a concrete slab type foundation for culvert replacements. When additional foundation support is necessary, a pile driver is normally used. Installation of driven piles for foundation support would cause noise and vibrations in the surrounding ground. In loose to medium dense sandy soil, the vibrations tend to densify the soil and thus cause ground surface settlement. Based upon soil studies, the soils at the project site are not expected to be susceptible to this type of settlement. However, loose layers of sand could be present which were not encountered during the soil borings. In addition, any manmade sandy fill, such as backfill used for utility lines or swimming pools, may be susceptible to vibration induced settlement.

---

[9] Noise levels change (increase/decrease) six decibels for every doubling of distance nearer or further from the noise source. For example, a tool which produces noise of 95 decibels at 25 feet registers at about 101 decibels at 12.5 feet, and about 89 decibels at 50 feet.

Pile driving vibrations can cause cosmetic and structural damage to surrounding structures, and can create a nuisance to neighbors. Vibrations generally become unpleasant to humans at about 0.2 inches per second, and objectionable at about 0.6 inches per second. The recommended safe vibrational level for residences is 2.0 inches per second. (Residential plaster cracks at a vibration level of about 5.0 inches per second.)

The vibration intensity caused by pile driving depends on the type of pile driving equipment and the soil conditions on the site. Driving sheet piles with a vibratory pile driver at the project site could create ground vibrations of about five inches per second at about five feet from the pile. The vibration intensity would decrease with distance from the pile. Buildings and other structures may be subject to damaging vibrations within 10 feet of the pile driving operation. Humans may find the vibrations objectionable within about 100 feet of the pile driving.

If it is determined by the District that foundation support is necessary in areas where the use of a pile driver is not feasible due to the proximity to residences or utility lines, drilled piers would be used, rather than a pile driver, to reduce potential impacts to property and utilities in the vicinity of construction. Construction of drilled piers would involve 1) drilling a hole to a predetermined depth; 2) inserting an prefabricated rebar cage into the hole and filling it with concrete; and 3) pouring a concrete slab over the drilled piers. The bridge or culvert would then be constructed on this concrete slab.

The culvert replacement proposed at Yerba Buena is approximately 20-25 feet from an existing residence, therefore, drilled piers would be used if additional foundation support is necessary. Construction activities in the vicinity of all properties listed in Table 24 are not expected to result in any significant property damage impacts.

Construction of the project would not result in a significant property damage impact on residences in the vicinity of project construction.

TEMPORARY PRIVACY AND SECURITY IMPACTS

The project would result in short-term privacy and security impacts on homes adjacent to the areas of construction on the creek. Fences and other barriers may be removed and construction crews working adjacent to homes would temporarily infringe upon the privacy of backyard areas. Pets may also be affected by the removal of fences. The project proposes to install temporary construction fencing to replace any backyard fences removed during construction, to provide security and privacy. Permanent fences would be replaced in kind.

Although these privacy impacts would represent a temporary nuisance to affected residents, they do not represent a significant impact.

Construction of the project would not result in significant privacy and security impacts.

3. MITIGATION

The above discussion concluded that the construction-related impacts of the proposed project would not be significant, except for those pertaining to property damage impacts associated with pile driving. Therefore, the mitigation measures listed below would further reduce those less-than-significant construction impacts, and would reduce the property damage impacts to a less-than-significant level. Although the project would not result in significant construction-related traffic, air quality, noise, and privacy and security impacts, the following mitigation measures are proposed to minimize project-related impacts.

TEMPORARY TRAFFIC

- Any truck trips associated with project construction would avoid neighborhood streets, except where a local street may need to be traversed to access a site.
- A detour plan would be implemented, as described above, to minimize potential traffic impacts on the roadways affected during culvert replacement.
- Project construction on the Foothill College campus would comply with the request from Foothill College that construction work be minimized during the first three weeks of the academic fall quarter.

TEMPORARY AIR QUALITY

- Earthmoving or other dust-producing activities would be suspended during periods of high winds.
- Equipment and manpower would be provided for watering of all exposed or disturbed soil surfaces at least twice daily. An appropriate dust palliative or suppressant, added to water before application, may be utilized.
- Stockpiles of soil or other materials that can be blown by the wind would be watered or covered.
- Paved construction areas and adjacent streets would be swept of all mud and debris, since this material can be pulverized and later resuspended by vehicle traffic.

TEMPORARY NOISE

- Construction activities would be conducted in accordance with all City Noise Ordinances which typically limit construction activity to the period between 7:00 AM and 6:00 PM Monday through Friday and 9:00 AM and 6:00 PM on Saturday.
- The contractor would be required to use "new technology" power construction equipment with state-of-the-art noise shielding and muffling devices. All internal combustion engines used on the project site would be equipped with adequate mufflers and would be in good mechanical condition to minimize noise created by faulty or poorly maintained engine, drive-train and other components.

TEMPORARY PRIVACY AND SECURITY

- The District would install temporary construction fencing to replace any backyard fences removed during construction, to provide security and privacy. Permanent fences would be replaced in kind.

PROPERTY DAMAGE

- In areas where foundation support is necessary and the use of a pile driver is not feasible due to the proximity to residences or utility lines, drilled piers would be used, rather than a pile driver, to avoid property damage impacts due to excessive vibration.

With implementation of the above mitigation, all construction-related impacts would be reduced to less-than-significant levels.

J. UTILITIES

1. EXISTING SETTING

There are many places where existing utility lines cross the project portion of the Adobe Creek channel. These are found primarily at road and bridge crossings. The areas of proposed construction that have existing utility lines include the proposed bridge and culvert replacements located at El Camino Real, Yerba Buena Avenue, Edith Avenue, Burke Road, O'Keefe Lane, and Tepa Way. Typical utility lines found along the project alignment include gas, water, sanitary sewer, and telephone lines.

2. IMPACTS

For the purposes of this project, a service impact is considered significant if the project would:

- directly affect a major utility line or facility; or
- result in a substantial increase in the demand for urban services.

The project would not result in an increased demand for services or utilities since the project does not propose any new development or expansion of existing development. The project would, however, require the relocation of utility lines where culvert and bridge replacements are proposed. A brief description of the utility lines that may be impacted is provided below.

El Camino Real: Two water lines, one sanitary sewer line, and one gas line extend along the north side of El Camino Real in the project vicinity. In addition, there are two Pacific Bell telephone lines and a storm drain on the south side of El Camino Real.

Yerba Buena Avenue: One gas line, one storm drain RCP line, and a Joint Pole (JP) line (aerial line) extend along the north side of Yerba Buena Avenue in the project vicinity. Also, one water line extends along the south side of Yerba Buena Avenue.

West Edith Avenue: One water line, one sanitary sewer line, and a JP line extend along the southern side of West Edith Avenue in the project vicinity. In addition, a gas line, a storm drain CMP line, and a phone line extend along the northern portion of West Edith Avenue in this area. Some of these utilities may not be affected by the project.

Burke Road: One water line, one gas line, and a JP line cross the roadway at Burke Road in the project vicinity.

O'Keefe Lane: One water line and one JP line extend along the north side of O'Keefe Lane in the project vicinity. One gas line extends under the middle of the roadway. One water line, one sanitary sewer line, and a storm drain CMP are located along the south side of O'Keefe Lane.

Tepa Way: One gas line is located along the north side and one water line is located along the south side of Tepa Way in the project area.

The proposed culvert replacements, and subsequent relocation of utilities, would result in temporary impacts such as short-term service interruptions. The District or utility company would repair and/or replace any utility lines that may be impacted during project construction.

Based upon the above discussion, the project would not result in significant construction-related utilities impacts due to their short-term nature.

3. MITIGATION

Although the project would not result in significant impacts on utilities, the following measures would mitigate potential utilities impacts.

- All underground utilities would be relocated during project construction as necessary. Any damage to these utilities would be repaired and/or replaced by the District or utility company.

K. CUMULATIVE IMPACTS

Cumulative impacts occur when the effects of two or more projects are combined. The importance of assessing cumulative impacts is that, whereas individual projects may have an insignificant impact, taken together, the impacts of two or more projects may be significant. Cumulative impacts typically occur when there is a succession of projects proposed over time in the same general area, affecting the same environment. CEQA requires an EIR to disclose cumulative impacts so that the public and decision-makers are aware of the full effect of a number of projects occurring in the same area.

1. IMPACTS

The project is not expected to result in cumulative impacts due to the short-term nature of most of these impacts. The only possible exception is the potential cumulative impacts upon vegetation and wildlife. These potential impacts are discussed below.

VEGETATION AND WILDLIFE

A 1988 riparian survey report indicated that 1,400 miles of riparian drainages exist within Santa Clara County, and of that total 945 miles (67.5 percent) of the rivers and streams support relatively healthy riparian habitat (H.T. Harvey and Assoc., 1988). Most of these healthy riparian habitats are in the foothills surrounding the valley floor. Agriculture, urbanization, and flood control measures have reduced riparian habitat on the valley floor to a remnant of its former extent. Some 32.5 percent of the waterways are impacted in some manner, and nearly 12 percent have been culverted or are bare earthen, modified channels. Most of this modification came prior to the enactment of the Clean Water Act (1972), as since that time loss of vegetation in riparian habitats has generally been slowed.

In addition to the proposed project, there are other recent, ongoing, and future projects which will affect the riparian ecosystem in other streams within Santa Clara County. Some of these projects are directly associated with the Santa Clara Valley Water District, while others are related to ongoing area wide development. There are relatively few projects cumulatively impacting Adobe Creek because of the almost continuous urban development along both banks. Other projects in the general area include the following:

- **Recent flood control projects** (including those proposed and under construction) on the following streams: Calabazas Creek, Coyote Creek, Guadalupe River, Llagas Creek, Matadero Creek, Penitencia Creek, San Tomas Aquino Creek, Saratoga Creek, Lower Silver Creek, Stevens Creek, and Uvas Creek. Flood improvement projects often result in the loss of riparian habitat in order to increase the capacity of the channels for flood control purposes. All losses will be mitigated by the District.

- **Instream Recharge Program** by the District. This includes the annual installation, maintenance, and removal of instream spreader dams in streams in the Santa Clara Valley for the purpose of increasing groundwater recharge. The evaluation of impacts upon vegetation and wildlife, water quality, channel shading and temperature, and fisheries resources is in progress. [Note: There are no recharge activities proposed for Adobe Creek.]

- **Channel maintenance activities** by the District. This includes the ongoing removal of vegetation in order to maintain the capacity of channels for flood control purposes. This also includes various bank stabilization methods (e.g., gabions, cribwalls, rock riprap) for erosion repair and sediment removal. These activities are under study and an EIR will be prepared to evaluate impacts upon vegetation and wildlife, water quality, channel shading and temperature, and fisheries resources.

- **Construction and replacement of numerous bridges** across streams and creeks. Each crossing requires the removal of vegetation, including upstream and downstream bank stabilization measures. Each crossing also results in shading-related impacts.

- **Adjacent development** along creeks. This includes construction of roadways and recreational trails. Increased human presence in proximity to fish and wildlife habitat generally lowers its ecological value.

- **Overall urban development** in the Santa Clara Valley. Virtually all of the stormwater drainage systems discharge into the various streams and creeks and, eventually, into either San Francisco Bay or Monterey Bay. This stormwater contains sediment and many pollutants which adversely affect the water quality of the waterways. Degraded water quality, in turn, adversely affects resources such as fisheries. This form of pollution is known as "nonpoint source pollution" because it does not originate from a single source.

The cumulative impact of all of the projects cited above upon the important biological resources of the area's waterways is significant *if not mitigated.* Components of this cumulative impact include the loss of riparian habitat, shading impacts, water quality degradation, changes in water temperature that affect fisheries and wildlife, erosion, and sedimentation and an increase in the extent of hard surfaces (gabions, riprap, etc.) along the channel.

The 1988 Santa Clara County riparian survey reported the following habitat conditions on the 44.51 miles of Adobe Creek and its tributaries: 15.13 miles (34 percent) of dense riparian, 18.88 miles (42 percent) of moderate riparian, 1.25 miles (3 percent) of sparse riparian, 2 miles (5 percent) of agriculturally impacted channel, 3.5 miles (8 percent) of earthen channel, and 3.75 miles (8 percent) of culverted or concrete channel. Thus, an estimated 16 percent of the entirety of Adobe Creek and its tributaries are currently modified earthen channels or culverted (including concrete) channels. Most of those degraded channel areas occur on the valley floor where the project area is located. Sacked concrete slope protection, wood walls, and other erosion control measures are present in many of the project areas; these were previously installed by private landowners and the District.

The proposed modifications to Adobe Creek would significantly affect vegetation, fish and wildlife resources on Adobe Creek, as described previously in this EIR, but these impacts are fully mitigated. There are few projects identified at this time that will have direct, additional significant effects on Adobe Creek. The proposed project would impact a total of approximately 2,000-2,500 linear feet of Adobe Creek. Mitigation measures are proposed for those impacts. Given the extent of existing riparian habitat within the County, the total of riparian habitat that exists along the creek, the negligible number of other known projects that may impact the creek, and the project's proposed mitigation, the cumulative impacts of this project are considered less than significant.

2. MITIGATION

Since the passage of NEPA and CEQA in 1969 and 1970, respectively, projects have been required to disclose their environmental impacts prior to approval. Mitigation measures are also required to be disclosed and implemented, where practical. Mitigation for impacts affecting creeks, rivers, and streams is also required for individual projects under a number of other environmental statutes, including the Clean Water Act and Sections 1601-03 of the California Fish & Game Code. Other laws may also apply on a case-by-case basis, including the Migratory Bird Treaty Act and the Endangered Species Act. Various agencies which administer these laws have set policies dictating that there be no net loss of habitat values and habitat acreages in riparian areas.

With regard to the cumulative impacts of the above-described projects, mitigation is implemented on a project-by-project basis, as is the case with the proposed project. Mitigation typically consists of the planting of replacement vegetation (at acreage replacement-to-impact ratios generally ranging from 3:1 to 1:1) and construction and post-construction water quality control measures. In addition, avoidance and/or reduction of impacts has also been widely utilized in recent years as a preferred "mitigation" where feasible. There are a number of riparian mitigation sites already established in Santa Clara County, including sites along Coyote Creek, Los Gatos Creek, Llagas Creek, Ross Creek, and the Guadalupe River. In addition, individual projects are now required to develop Stormwater Pollution Prevention Plans and comply with other Santa Clara Valley Nonpoint Source Pollution and National Pollutant Discharge Elimination System (NPDES) permit requirements.

All projects considered to have potentially significant impacts on the area's riparian resources are subject to individual environmental review under CEQA and/or NEPA, and are required to include mitigation to offset those impacts. The mitigation of the individual project's significant impacts would avoid significant unmitigated cumulative impacts.

SECTION III

ALTERNATIVES TO THE PROPOSED PROJECT

CEQA (Section 15126) requires that all EIRs analyze a range of alternatives to a project that could feasiblely attain the basic project objectives, comparing the merits of each. The intent of the alternatives analysis is to focus on possible alternatives capable of reducing the project's significant environmental effects.

The District has analyzed a wide range of alternatives to the proposed project. A complete discussion of all of the alternatives considered by the District is provided in the Engineer's Report. The following discussion provides an analysis of the No Project Alternative and three additional alternatives for reconfiguring portions of the proposed project. The three latter alternatives focus on reducing biotic impacts, which are the primary impacts of the proposed project.

A. NO PROJECT ALTERNATIVE

The No Project Alternative consists of not constructing the proposed modifications on Adobe Creek and leaving the creek in its present condition. Under the No Project Alternative, residents within the floodplain would continue to face potential flooding hazards. There are currently over 190 single family residential, five multi-unit dwellings, and 26 businesses in the Adobe Creek floodplain which would be inundated during a one percent flood. The No Project Alternative would allow for continued degradation of the channel due to existing erosion and flooding problems.

Under the No Project Alternative, continuing maintenance of Adobe Creek would be required throughout the project area. Due to the ongoing erosion of the banks and the proximity of homes to the creek, some reaches of Adobe Creek would require continuous erosion repair and protection. The District believes that under the No Project Alternative, sacked concrete slope protection or gunite would ultimately be needed in many areas to provide bank protection. Therefore, although the No Project Alternative would forego the improvements proposed by the project, the quantity of natural creek banks in the project area would decrease over the long term, and any associated riparian habitat would degrade, as well. In addition, several sections of the creek are self-destructive and will need major rehabilitation work in the next few years if a project is not constructed. These sections are downstream of West Edith Avenue and at Foothill College.

The estimated cost of the No Project Alternative is approximately $555,400 per year. This includes the average annual flood damages, average annual emergency maintenance costs, development costs which would be incurred without the project, annual erosion repair costs, and annual flood insurance administration and policy costs.

Based upon the above discussion, the No Project Alternative is not considered by the District to be a feasible alternative to the proposed project since it does not meet any of the stated objectives of the proposed project. While the No Project Alternative would avoid the impacts of the proposed project over the short-term, it would result in continued environmental degradation of the channel from bank erosion, flooding, and associated decreases in biological habitat values over the long term.

B. WEST EDITH AVENUE BOX CULVERT BYPASS/ARMORED LOW-FLOW CHANNEL

This alternative consists of constructing a 10 foot by 10 foot reinforced double box culvert under Fremont Road/West Edith Avenue, along Reach 5 of the project. The design of the bypass alternative is shown in the Engineer's Report. This alternative is being evaluated as an alternative to the proposed project at the request of the residents adjacent to the proposed project. The bypass channel would begin in the park upstream of West Edith Avenue and continue under Fremont Road, across the Rogez property, and converge with the creek channel downstream of West Edith Avenue. The bypass channel would extend for approximately 1,025 feet. The bypass structure would be designed to maintain low flows in the main creek channel, and only allow high flows to enter the bypass channel. This alternative also includes the installation of 1.5 foot by 3.0 foot gabions on both banks and rock riprap on the channel bottom. Concrete cutoff walls would be installed at the toe of both banks.

This alternative would impact slightly less riparian habitat than the proposed project design. The impacts upon riparian habitat of the various alternatives is compared in Table 26. However, this alternative would have an additional 0.9 acre impact on landscaped/non-native habitat where the bypass culvert would be constructed.

The Box Culvert Bypass/Armored Low-Flow Channel Alternative would have similar impacts on biological resources as the proposed project, with two exceptions. First, the outlet to the bypass culvert could attract fish during storm events, but flow velocities at the outfall would render it impassable to fish. The possible attraction of fish into the culvert could result from high flows moving quickly through the smooth culvert and misleading fish into thinking it is the main channel. It could thereby distract steelhead from moving efficiently upstream. However, this is not a critical issue, as the fisheries resources in Adobe Creek are minimal. Second, the bypass alternative would not provide the mid-bank revegetation bench (included in the proposed project) on which mitigation plantings could be installed. Adding a mid-bank revegetation bench would entail additional riparian habitat impacts. Given those two drawbacks, this alternative is considered less desirable than the proposed project design.

This alternative would require large entrance and exit structures for the bypass which would result in visual impacts greater than those associated with the proposed project. Since these large structures could not be completely fenced in, they could present a safety hazard. The construction of these large structures could also result in geotechnical impacts, depending upon the conditions at this location and the amount of excavation required.

The bypass structure would have a major adverse impact on traffic and emergency access on Fremont Road during its construction. Construction under Fremont Road could also impact existing utility lines. The Box Culvert Bypass/Armored Low Flow Channel Alternative would also result in land use and geologic impacts to the park and the Rogez property due to grading and possible property damage. This alternative would result in impacts to cultural resources and hazardous materials similar to those of the proposed project.

In addition, due to confined working conditions, this alternative would be more costly and time consuming than the proposed project. This alternative is anticipated to cost almost $6 million. Therefore, the Box Culvert Bypass/Armored Low Flow Channel Alternative is considered by the District to be less desirable than the proposed project. In summary, this alternative would result in similar biotic impacts, and may result in greater construction and land use impacts than the proposed project at greater cost, and is therefore is not considered to be environmentally preferable to the proposed project.

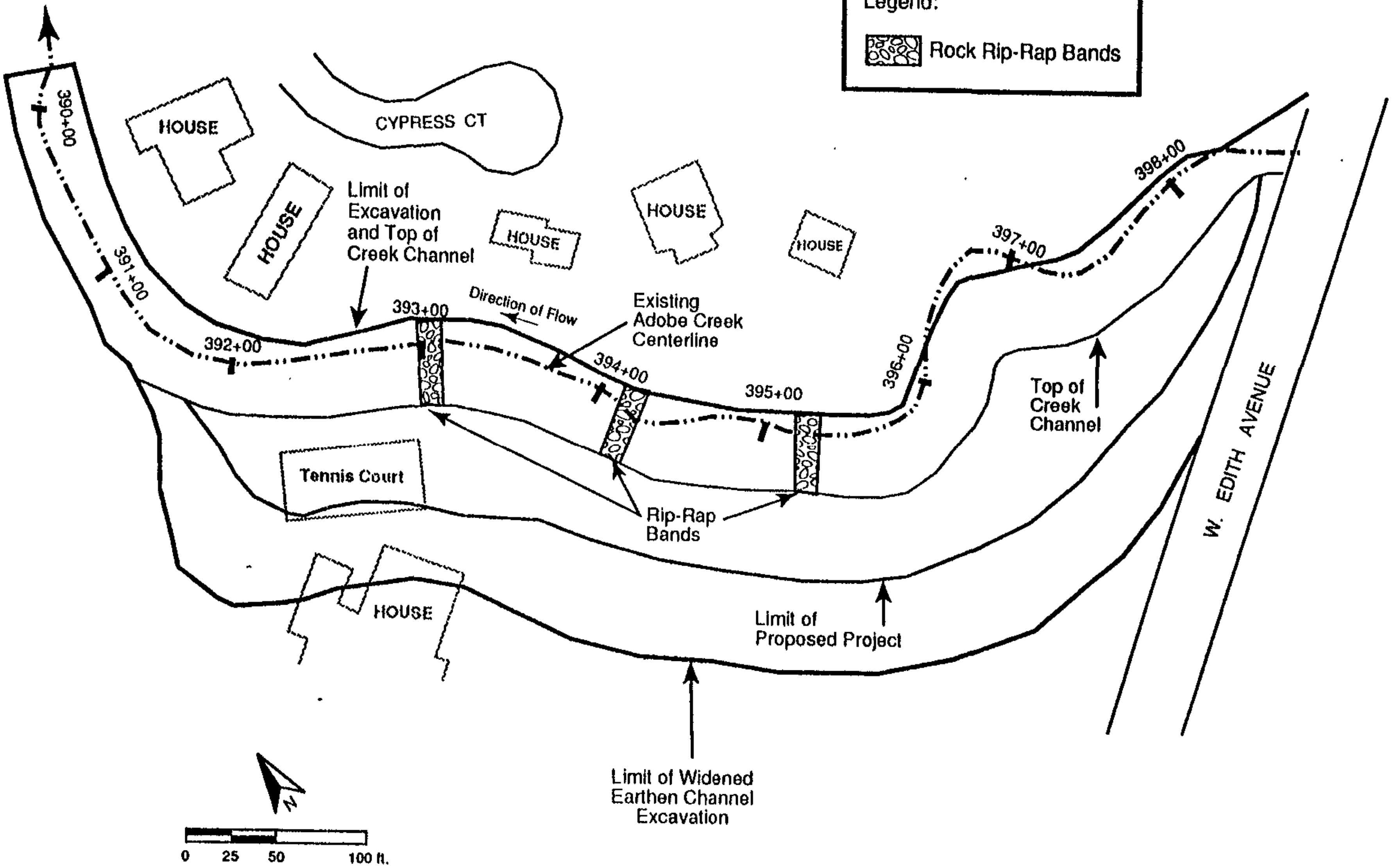
TABLE 26
IMPACTS OF ALTERNATIVES

Alternative	Riparian Habitat (Sq Ft)			Total	
	Low	Medium	High	Sq. Ft.	Acres
Proposed Project - West Edith Avenue	16,001	4,058	150	20,209	0.46
Box Culvert Bypass Alternative - West Edith Avenue	10,051	4,933	150	15,134	0.35
Widened Earthen Channel Alternative - West Edith Avenue	16,001	4,058	150	20,209	0.46
Proposed Project - Foothill College	2,785	4,535	10,096	17,416	0.40
Widened Earthen Channel Alternative - Foothill College	5,370	5,510	10,575	21,455	0.49

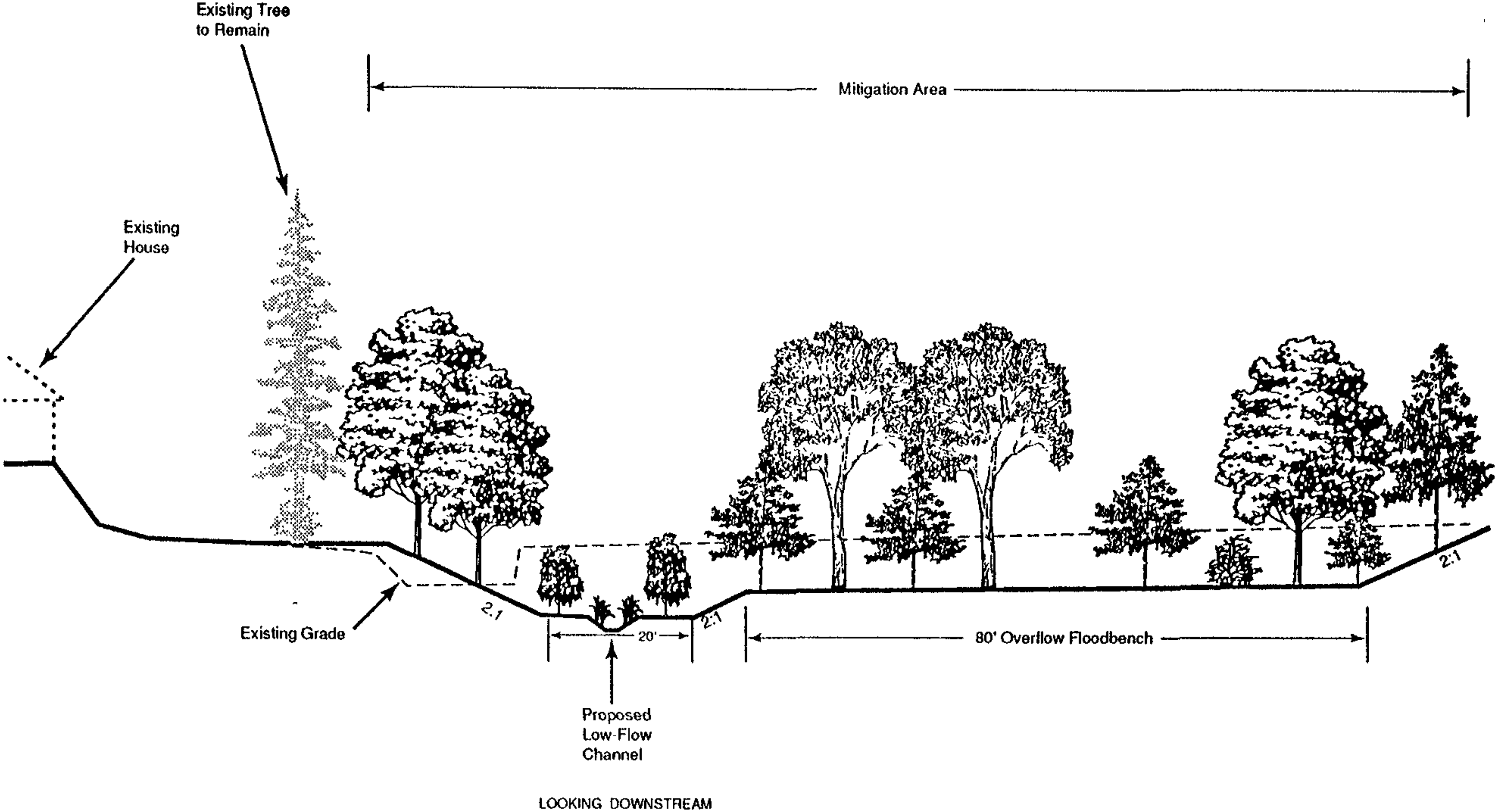
C. WEST EDITH AVENUE WIDENED EARTHEN CHANNEL ALTERNATIVE

This alternative would be constructed in the same reach of the creek (i.e., Reach 5) as the proposed project design, but would significantly expand the width of the creek channel and the overflow floodbench on the right bank. Figures 31 and 32 show the plan view and cross section view configurations, respectively, of this alternative. The earthen low flow channel bottom would be 20 feet wide, the creek banks would be laid back to a 2:1 slope, and an 80 foot wide overflow floodplain would be excavated on the right bank. This alternative would not incorporate the use of riprap, gabions, sacked concrete slope protection or other "hard" materials, with the exception of several narrow bands of riprap that would be imbedded in the channel bed to control erosion.

The construction of this alternative would have the same riparian vegetation removal impacts as the proposed project, but would impact approximately 2.22 acres of landscaped/non-native habitat and developed areas to the right of the existing channel (refer to Table 26). Included in that area are the Rogez residence, out buildings, a tennis court, swimming pool and landscape vegetation. The loss of predominantly non-native vegetation in these areas would not be considered a significant impact because of its relatively low habitat value.



PLAN VIEW OF W. EDITH AVENUE WIDENED EARTHEN CHANNEL ALTERNATIVE FIGURE 31



CROSS-SECTION OF W. EDITH AVENUE WIDENED EARTHEN CHANNEL ALTERNATIVE FIGURE 32

The revegetation plan for this alternative would include the installation of willows along the base of the creek banks, with other trees and shrubs (see mitigation site descriptions for typical species) planted on the upper creek banks and floodplain. The riparian mitigation area afforded by this alternative is estimated to be 2.2 acres, significantly more than the 0.3 acres available within the proposed project design. If this alternative were constructed the project would be able to reduce the number of mitigation sites needed to achieve the target acreage.

Some of the key advantages to this design are listed below:

1) Sufficient flood capacity would be created to allow revegetation of the entire channel and floodplain area, thereby allowing the creation of a riparian habitat area larger than the proposed project's revegetation area at West Edith Avenue (which would have a floodplain devoid of trees).

2) This alternative would allow the planting of willow, and other appropriate tree species, close to the low flow channel, thus providing denser channel shading than the proposed project. Establishment of trees in such close proximity to the low flow channel helps reduce water temperatures, contributes leaves and insects to the aquatic ecosystem, and provides food and cover for wildlife species that frequent vegetation along channel beds.

3) Removal of vegetation that may colonize the creek channel would not be required (as a flood control maintenance activity) under this alternative because adequate flood capacity would exist even with a vegetated channel. Thus, a recurrent source of disturbance of the riparian habitat would be eliminated.

4) The elimination of most "hard" materials in the reconstructed channel would provide a larger area of native soil substrate within the earthen channel and overflow floodplain. This earthen base would provide a more suitable medium for recolonization of the area by plants and wildlife, and ultimately for the establishment of a more sustainable, natural ecosystem.

5) This alternative, with its broad forested channel and floodplain, and lack of riprap, gabions, etc., would be aesthetically superior to the proposed project.

6) The creation of fewer, but larger, mitigation sites (such as this alternative) is generally less costly and easier to monitor and maintain than the creation of more numerous and smaller mitigation sites (such as the proposed project).

This alternative would, however, result in significant land use impacts upon the Rogez property at West Edith Avenue. Construction of the widened earthen channel would extend approximately 80 feet south of the existing channel. This would encroach further upon the Rogez property resulting in property damage upon the existing house. Implementation of this alternative would require purchase of the entire property. This would add $2 million to the cost of this alternative.

This alternative would result in similar geology, hazardous materials, cultural resource, construction-related, and utilities impacts to those of the proposed project. The West Edith Avenue Widened Earthen Channel Alternative would be aesthetically and biologically superior to the proposed project by allowing for revegetation of the entire channel and floodplain area, and by eliminating "hard" construction materials such as riprap, gabions, and sacked concrete slope protection in this reach.

In summary, this alternative would provide for a more complete restoration of riparian habitat along the creek than the proposed project design. From an environmental impact perspective, this alternative is superior to the proposed project. However, this alternative would require the District to acquire the entire Rogez property. The excessive cost of purchasing the Rogez property is this alternative's primary drawback, as compared to the proposed project.

D. FOOTHILL COLLEGE WIDENED EARTHEN CHANNEL ALTERNATIVE

This alternative consists of constructing an excavated earthen channel, approximately 130 feet in width, that contains a meandering 10 foot wide low-flow channel along Reach 11 of the project. The meanders of the existing creek channel would be stabilized by buried bands of rock (groins), which would extend across the bench at the farthest point of each meander.

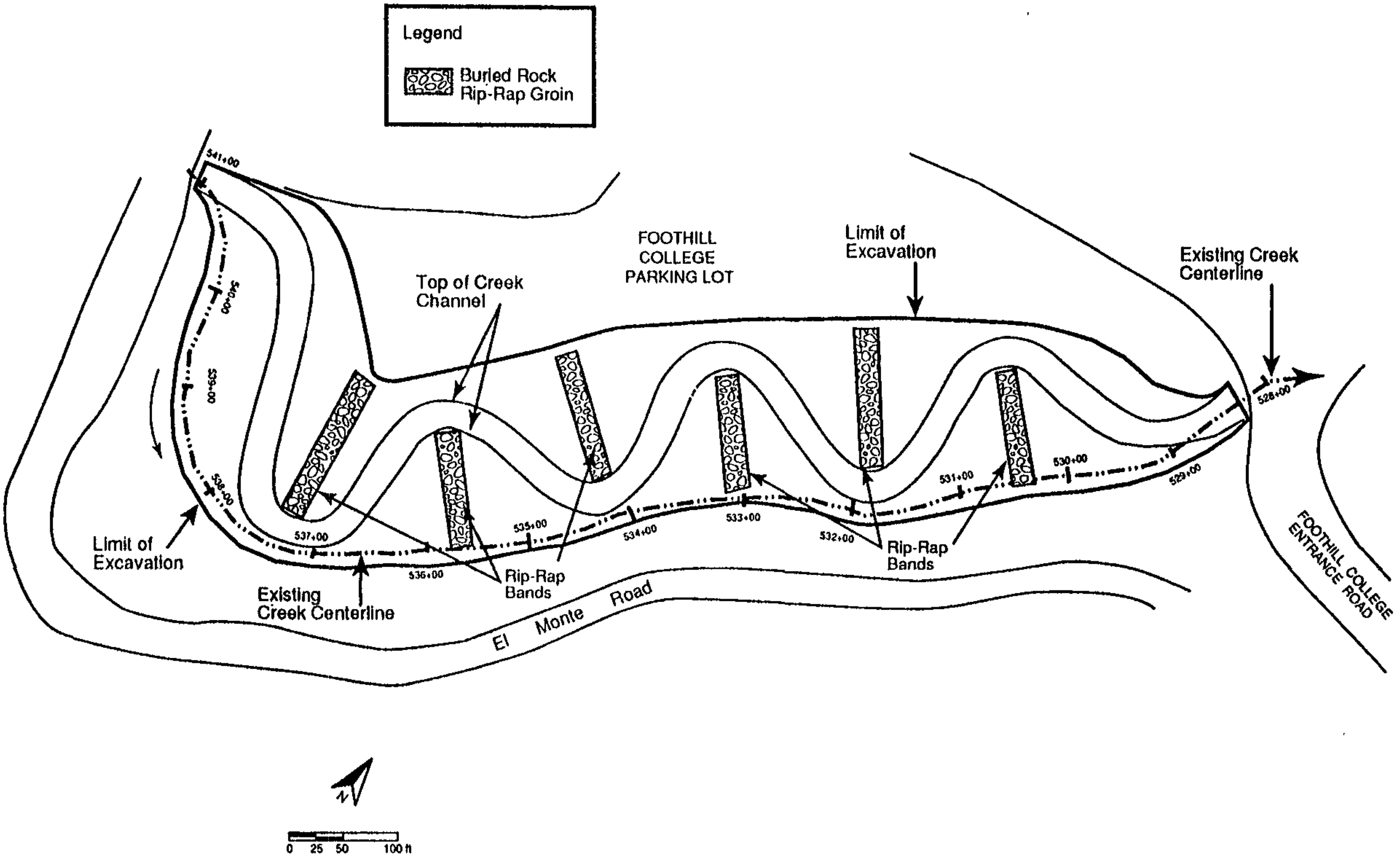
This alternative would be constructed in the same reach of the creek as the proposed project design, but would replace the existing creek channel with a sinuous low flow channel meandering through a wide floodplain. The floodplain would be excavated from the large parking lot flanking the creek's right bank. Figures 33 and 34 show the plan view and cross-section view configurations, respectively, of this alternative. The existing earthen channel bottom would be slightly widened to 10 feet, the channel banks laid back to a 2:1 slope, and a 130 foot wide floodplain would be excavated around the channel. This alternative would not incorporate the use of riprap, gabions, sacked concrete slope protection, or other "hard" materials, with the exception of several narrow bands of riprap imbedded in the channel bed to control erosion and maintain the position of the low flow channel.

The construction of this alternative would cause slightly more riparian vegetation removal than the proposed project, and it would impact a larger number of the non-native trees (predominantly Eucalyptus) scattered throughout the parking lot (refer to Table 26). The loss of those additional non-native trees is not considered a significant impact, and the additional riparian habitat impact of 0.09 acres is considered negligible.

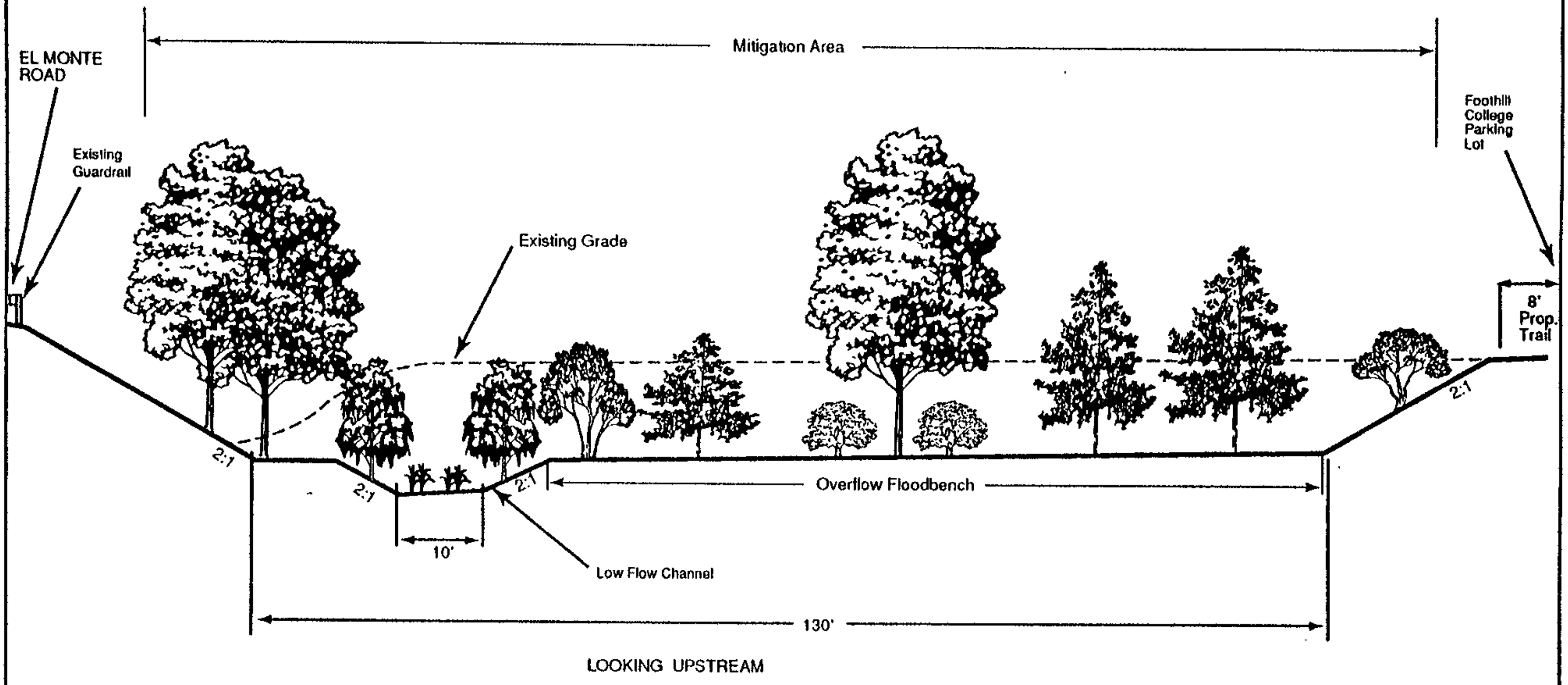
The revegetation plan for this alternative would include the installation of willows along the low flow channel and in the adjacent floodplain, with other trees and shrubs planted on the outer floodplain. The riparian mitigation area afforded by this alternative is estimated to be 3.75 acres, significantly more than the 0.6 acres available within the proposed project design at Foothill College.

This alternative provides the same advantages cited for Alternative C, described above. It is also considered the environmentally superior design for this reach. The Widened Earthen Channel Alternative would restore the "natural" function of the creek. The entire 130 foot channel, excluding the low-flow channel, would be revegetated with native species.

The Widened Earthen Channel Alternative would, however, result in a significant land use impact to Foothill College by requiring the removal of 287 parking spaces (65 percent) within Parking Lot A at Foothill College. This is significantly more than the proposed project. Foothill College currently has a total of 3,450 parking spaces on campus to serve an enrollment of 14,500 students and a faculty and staff of 400. Thus, under existing conditions, Foothill College has a shortage of available parking and this alternative would substantially worsen this shortage.



PLAN VIEW OF FOOTHILL COLLEGE WIDENED EARTHEN CHANNEL ALTERNATIVE FIGURE 33



CROSS-SECTION OF FOOTHILL COLLEGE WIDENED EARTHEN CHANNEL ALTERNATIVE FIGURE 34

District and Foothill College officials have identified two possible ways to mitigate the loss of parking spaces due to this alternative. One is to find vacant areas on the campus to develop parking spaces. There are currently three locations that together could provide approximately 100 parking spaces.

In addition, there is a 1.8 acre parcel of land on the north side of campus that could provide approximately 200 parking spaces. While this land is not owned by Foothill College, it is currently for sale. The 1.8 acre parcel is estimated to cost approximately $400,000 - $600,000 to acquire the land. An additional $4,000 cost per parking space would be needed to develop the parking lot, which would total approximately $1,400,000.

An alternative to developing the 1.8 acre parcel would be the construction of a multi-level parking structure at the current location of Parking Lot C. This parking structure would provide 434 spaces (217 existing + 217 new) and would be estimated to cost approximately $3 million ($7,000 per space).

The Widened Earthen Channel Alternative would result in similar geology, hazardous materials, cultural resource, construction-related, and utilities impacts to the proposed project. The Foothill College Widened Earthen Channel Alternative would be aesthetically superior to the proposed project by allowing for revegetation of the entire channel and floodplain area and by eliminating "hard" construction materials such as riprap, gabions, and sacked concrete slope protection.

In summary, this alternative would provide for a more complete restoration of riparian habitat along the creek than the proposed project design. From an environmental perspective, this alternative is environmentally superior to the proposed project. However, the primary drawback of this alternative is its impact on existing parking at Foothill College, and the substantial costs associated with mitigating this impact.

E. ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The Widened Earthen Channel Alternative design at West Edith Avenue and at Foothill College is the environmentally superior alternative since it would provide for the most complete restoration of the riparian habitat along Adobe Creek. This alternative would allow for revegetation of the entire channel and floodplain area, and would mostly eliminate the use of "hard" construction materials, such as gunite and sacked concrete slope protection, in the creek channel. The primary drawback of this alternative is the land use impacts upon the adjacent neighborhood park, the Rogez property, and a critical parking lot at Foothill College, as described above. Despite the greater land use impact of this alternative, on balance it is still the environmentally superior alternative because of its benefits to the Adobe Creek corridor. As noted previously, the ongoing loss of riparian corridors in Santa Clara County has been substantial over the past several decades. In this context, the Widened Earthen Channel Alternative represents an opportunity to reestablish a segment of this important natural resource.

SECTION IV

SIGNIFICANT UNAVOIDABLE IMPACTS OF THE PROJECT

The proposed project would not result in any significant, unavoidable impacts. All potentially significant impacts of the project would be reduced to a nonsignificant level with the implementation of the mitigation measures identified in this EIR.

SECTION V

IRREVERSIBLE ENVIRONMENTAL CHANGES AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The project would not result in significant environmental changes, since the project would not permanently change the land use of any site. The only irreversible changes associated with the project are the use of non-renewable resources during the construction phase, including concrete and petroleum products.

SECTION VI

GROWTH-INDUCING IMPACTS OF THE PROPOSED ACTION

Since the project does not propose any new development or expansion of existing development, it would not have a significant growth-inducing impact.

SECTION VII

SCOPING AND COORDINATION WITH AGENCIES AND THE PUBLIC

On January 16, 1995, the Santa Clara Valley Water District issued a Notice of Preparation (NOP) of an EIR to various Federal, State, regional and local governmental agencies, as required by CEQA. Attached to the NOP was a description of the proposed project and an Initial Study. These materials are reproduced in Appendix G of this EIR.

A scoping meeting to solicit input on the scope and content of the Section 404 Permit application and the EIR was held on January 26, 1995 at the Los Altos Hillview Recreation Center. Notices of the scoping meeting were mailed to regulatory and trustee agencies, as well as interested community groups. In addition to the public scoping meeting, a field tour of the project site was conducted the same day. This tour included representatives from the District, the Regulatory Branch of the Corps, the California Regional Water Quality Control Board, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the U.S. Environmental Protection Agency.

During the circulation of the NOP a number of comments were received. All letters and written comments received have been reproduced in Appendix G. The primary issues raised in the comments and letters are addressed within this EIR.

A public hearing on the Draft EIR was held on December 12, 1996. The comments received at the hearing and in writing and the District responses are reproduced in Appendix H. This final EIR includes changes made as a result of the comments on the Draft EIR.

SECTION VIII

LIST OF PREPARERS

AUTHORS

Santa Clara Valley Water District

Environmental Resources Management Unit
Terry Neudorf, Environmental Planner II
Vickie Germany, Environmental Planner II

Flood Management Policy and Planning Unit
Scott Wilson, Associate Civil Engineer

CONSULTANTS

H.T. Harvey & Associates
Ecological Consultants
Alviso, CA

Ron Duke, Principal
Dan Stephens, Project Manager
Dr. Pat Boursier, Senior Plant Ecologist
Dr. Scott Terrill, Senior Wildlife Biologist
Dr. Mark Jennings, Herpetologist and Fisheries Biologist
Nancy Heil, Assistant Project Manager/Revegetation Specialist

David J. Powers & Associates, Inc.
Environmental Planners & Consultants
San Jose, CA

John M. Hesler, Principal
Judy Shanley, Project Manager
John Schwarz, Assistant Project Manager
Jodi Starbird, Graphic Artist

Archaeological Resource Management
Cultural Resources Consultants
San Jose, CA

Dr. Robert Cartier, Principal

Terratech, Inc.
Hazardous Materials Consultants
San Jose, CA

Mary Bannister, Registered Geologist
Eric Lautenbach, Civil Engineer

SECTION IX

REFERENCES

Archaeological Resource Management, Cultural Resources Evaluation of the Adobe Creek Project in the County of Santa Clara, April 25, 1994.

Bay Area Air Quality Management District, Draft Bay Area '94 Clean Air Plan, Volume I, October, 1994.

California Department of Fish and Game, California Natural Diversity Data Base - Rarefind, 1994.

California Department of Fish and Game, Wildlife Habitat Relationships Database, 1996.

California Department of Fish and Game Code, California Endangered Species Act, §2050-2098, 1984.

California Native Plant Society, Inventory of Rare and Endangered Vascular Plants of California, Edited by M. W. Skinner and B. Pavlik, 1994.

California Regional Water Quality Control Board, San Francisco Bay Region, Order 95-80, NPDES Permit Number CAS029718, August 23, 1995.

California Regional Water Quality Control Board, San Francisco Bay Region, Water Quality Control Plan for the San Francisco Bay Basin (Region 2), June 21, 1995.

City of Los Altos, Los Altos General Plan 1987-2005, adopted October 20, 1987.

City of Palo Alto, Palo Alto Comprehensive Plan 1980-1995, February 2, 1981.

Clean Water Act, as amended by the Water Quality Act of 1987, Public Law 100-4, March, 1988.

David J. Powers and Associates, Draft Environmental Impact Report for Adobe Creek Channel Improvements Charleston Road to El Camino Real, November 1989.

Endangered Species Act of 1973 as amended, 16 U.S.C. Sections 1531-1544, 1973.

Endangered Species Act Regulations, 50 C.F.R., Part 402, 1986.

Engineering-Science, Inc., Fourth Administrative Draft Environmental Impact Report/Environmental Impact Statement for the Guadalupe River Flood Control Project, Prepared for the Santa Clara Valley Water District and the U.S. Army Corps of Engineers, November, 1994.

Fish and Wildlife Coordination Act, Public Law 85-624, 16 U.S.C. 661-667(e), 1958.

Griggs, Gary and Gilchrist, John, The Earth and Land Use Planning, 1977.

Habitat Restoration Group, Adobe Creek Restoration Plan, May 1989.

Habitat Restoration Group, Biological Resources of Upper Adobe Creek Study Area, Prepared for the Santa Clara Valley Water District, 1989.

Hickman, J.C. ed., The Jepson Manual: Higher Plants of California, University of California Press, Berkeley, 1993.

Holland, R.F., California Department of Fish and Game, Preliminary Description of the Terrestrial Natural Communities of California, 1986.

H.T. Harvey and Associates, Study of the Use of Revegetated Gabions by Breeding Birds, June 11, 1998.

H.T. Harvey and Associates, Adobe Creek Watershed Planning Study Environmental Impact Report Alternatives Analysis, July 27, 1995.

H.T. Harvey and Associates, Adobe Creek Watershed Planning Study Environmental Impact Report Biological Resources Section, September 13, 1995.

H.T. Harvey and Associates, Adobe Creek Watershed Planning Study Environmental Impact Report Visual Section Graphics, September 8, 1995.

H.T. Harvey and Associates, Upper Adobe Creek Santa Clara County, California: Identification of Waters of the United States, Prepared for the Santa Clara Valley Water District, December 1993.

H.T. Harvey and Associates, Riparian Inventory of Santa Clara County, Prepared for the Greenbelt Coalition/Committee for Green Foothills, 1988.

H.T. Harvey and Associates, Santa Clara County Natural Resources Sensitivity Areas Base Maps, 1980.

Migratory Bird Treaty Act, 16 U.S.C. §703, Public Law 93-300, June 1, 1974.

Meyer, Kenneth E. and William F. Laudenslayer, Jr. Ed., California Department of Forestry and Fire Protection, A Guide to Wildlife Habitats of California, Sacramento, CA, 1988, 166 pp.

Remsen, J.V., California Department of Fish and Game, Bird Species of Special Concern in California, Report No. 78-1, 1979.

Santa Clara Valley Nonpoint Source Pollution Control Program, Construction Storm Water Pollution Control Compliance Source Book, 1992.

Santa Clara Valley Water District, Flood Control Planing Division, Adobe Creek Watershed Planning Study, Draft Engineer's Report, September 1995.

Soil Conservation Service, Soils of Santa Clara County, USDA, 1968.

Stejer, Warham and Tepel, Robert, Geologic Review of Adobe Creek Proposed Channel Improvements, August 10, 1994.

Terratech, Inc. Phase I Hazardous Materials Assessment Upper Adobe Creek El Camino Real to Moody Road Santa Clara California, January 24, 1994.

Terratech, Inc. Adobe Creek Watershed Planning Study Creekbed Sediment Testing and Analysis, Santa Clara County, California, December 1994.

Town of Los Altos Hills, Town of Los Altos Hills Draft General Plan, 1995.

U.S. Army Corps of Engineers, Waterways Experiment Station, Corps of Engineers Wetlands Delineation Manual, January 1987.

Zeiner, David C., et al, editors, California Department of Fish and Game, California's Wildlife, Vol. I, Amphibians and Reptiles, 1988.

Zeiner, David C., et al, editors, California Department of Fish and Game, California's Wildlife, Vol. II, Birds, 1990a.

Zeiner, David C., et al, editors, California Department of Fish and Game, California's Wildlife, Vol. III, Mammals, 1990b.

SECTION X

PERSONS CONSULTED

Germany, Vickie, Santa Clara Valley Water District, personal communications, 1995-96.

Gilroy, Ian, Santa Clara Valley Water District, personal communications, 1995-96.

Lawrence, Rob, U.S. Army Corps of Engineers, interagency site visit, January 26, 1995.

Littlefield, Mark and Willy, Alison, U.S. Fish and Wildlife Service, interagency site visit, January 26, 1995.

Moghbel, Keyvan, Regional Water Quality Control Board, interagency site visit, January 26, 1995.

Monroe, Mike, U.S. Environmental Protection Agency, interagency site visit, January 26, 1995.

Neudorf, Terry, Santa Clara Valley Water District, written and personal communications, 1994-96.

Padley, Doug, Santa Clara Valley Water District, personal communications, 1995-96.

Roper, Margaret, California Department of Fish and Game, interagency site visit, January 26, 1995; Site visit with H.T. Harvey and District personnel, June 24, 1997.

Sheydayi, Peter, Santa Clara Valley Water District, personal communications, 1994-96.

Spahr, Linda, Santa Clara Valley Water District, personal communications, 1995-96.

Squires, Louisa, Santa Clara Valley Water District, personal communications, 1994-95.

Stiener, Judith, Executive Director, The Trust for Hidden Villa, personal communications, November 1995.

Talley, Randall, Santa Clara Valley Water District, personal communications, 1994-96.

Wilcox, Carl, California Department of Fish and Game, fax, March 27, 1995.

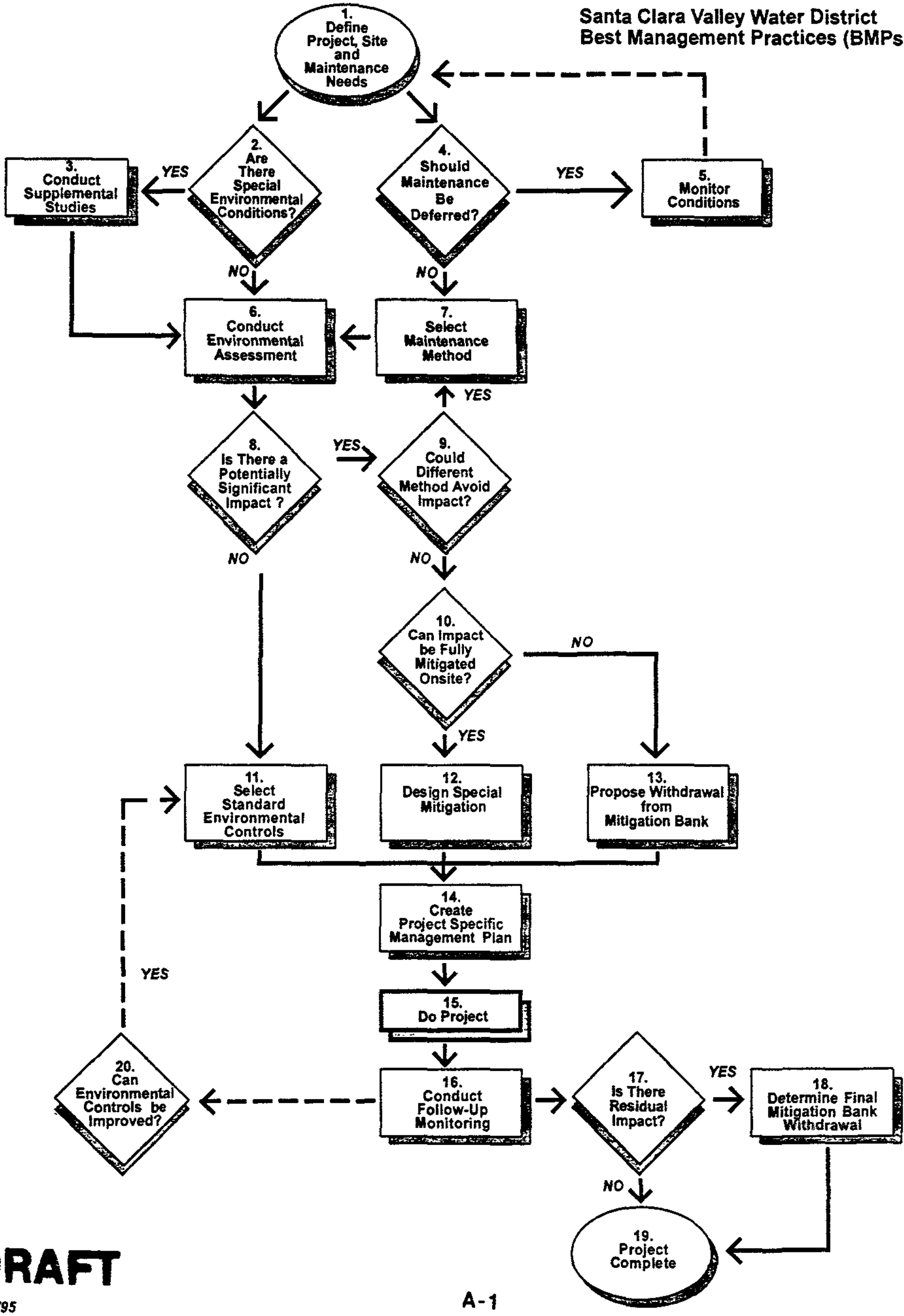
Wilson, Scott, Santa Clara Valley Water District, written and personal communications, 1994-96.

APPENDIX A

MAINTENANCE PROGRAM BEST MANAGEMENT PRACTICES

Draft Flowchart for the

Santa Clara Valley Water District Best Management Practices (BMPs)


1. Define Project, Site and Maintenance Needs
2. Are There Special Environmental Conditions?
YES
3. Conduct Supplemental Studies
NO
4. Should Maintenance Be Deferred?
YES
5. Monitor Conditions
NO
6. Conduct Environmental Assessment
7. Select Maintenance Method
YES
8. Is There a Potentially Significant Impact ?
YES
9. Could Different Method Avoid Impact?
NO
NO
10. Can Impact be Fully Mitigated Onsite?
NO
YES
11. Select Standard Environmental Controls
12. Design Special Mitigation
13. Propose Withdrawal from Mitigation Bank
14. Create Project Specific Management Plan
15. Do Project
YES
20. Can Environmental Controls be Improved?
16. Conduct Follow-Up Monitoring
17. Is There Residual Impact?
YES
18. Determine Final Mitigation Bank Withdrawal
NO
19. Project Complete

DRAFT

11/17/95

BMP Flow Chart Explanation

The flow chart shows how a maintenance project might be processed under a Best Management Practices program. In the flow chart, ovals denote the beginning and end of a project, diamonds are decision points phrased as questions to be addressed by the District, and rectangles enclose actions to be taken by the District.

1. **Define Project Site and Maintenance Needs:** The first step entails identifying the problem. What needs repair? For what purpose? For example, the District may have found that sediment has accumulated in a reach of stream reducing flood capacity below design, violating FEMA regulations, or showing a risk of local flooding. As another example, there may be erosion damage and a potential for imminent bank failure with damage to adjoining property.

2. **Are there special environmental conditions?** The District conducts a preliminary site evaluation to determine whether special conditions require more detailed environmental studies. Examples of the special conditions include:

   - Sensitive vegetation (wetland, riparian)
   - Large trees (e.g. these may be raptor nest sites)
   - Other bird nesting sites
   - Known fish migration routes
   - Fish spawning areas (gravels)
   - Known presence of special status species
   - Habitat indicators for special status species (e.g. pickleweed indicates habitat for salt marsh harvest mouse)
   - Potential presence of toxins (e.g. heavy metals) in the sediments

3. **Conduct supplemental studies:** If special conditions are present (Box 2.) then supplemental studies would be conducted by qualified personnel (e.g. biologists, hazardous materials specialists etc.). The studies would focus on the information needed to assess potential for impact. Because some biological resources are seasonal (e.g. rare plant blooming, fish spawning), there may need to be some advance planning.

4. **Should maintenance be deferred?** This is a key strategy question. The District will balance the cost and environmental impact of doing the project now against the possible damage resulting from no action. The assessment will estimate the likelihood that an observed problem will intensify within a year if the maintenance is not performed, resulting in increased cost of greaterenvironmental damage when work is finally done.

5. **Monitor conditions:** Where maintenance is to be deferred (Box 4), the District will monitor circumstances that either render the maintenance activity more urgent, or render it unnecessary. For example, if an area of erosion is increasing in size or rate of bank failure, the repair may be deemed urgent. If a storm or series of storms has flushed sediment through a reach where sediment had accumulated, the sediment removal may no longer be necessary. This process feeds back to the start of the annual program (Box 1.)

6. **Conduct environmental assessment:** The assessment is based on the suggested maintenance method (Box 7) and site environmental information (Box 2), with supplemental studies (Box 3) if applicable. This assessment will identify the impacts of the maintenance project as prescribed on resources at the project site. The assessment will describe the impact of the maintenance procedures and identify whether the impact is significant or non-significant to each factor or resource.

7. **Select maintenance method:** If maintenance won't be deferred (Box 4), then the District will design appropriate maintenance, specifying the basic approach and type of equipment to be used. The selection of the most appropriate maintenance method follows the Best Management Practice for design where environmental, engineering and cost are considered.

8. **Is there a significant impact?** Most maintenance projects will have no significant environmental impact because of the nature of the project, low environmental sensitivity of the site or through the effect of standard implementation environmental controls. Some impacts will need further mitigation, such as removal of jurisdictional wetland which cannot be replaced in-kind onsite, or removal of endangered species habitat.

9. **Could different method avoid impact?** If the proposed maintenance design results in a potentially significant impact (determined in Box 8), then the District will consider whether alternative maintenance methods could avoid the impact to sensitive resources. For example, for erosion repair in a steep-sided channel in a public park, a cellular soil confinement system planted with live vegetation may work just as well sacked concrete and will avoid the aesthetic impact of using an inert material. With a different maintenance method, the assessment passes back through Boxes 7, 6, and 8.

10. **Can impact be fully mitigated onsite?** Many impacts can be avoided or mitigated onsite, but others will leave a residual impact to be

mitigated through compensatory mitigation. Examples of impacts which cannot be completely mitigated onsite include:

- Loss of jurisdictional wetlands.
- Loss of habitat for special status species
- Reduction of species diversity.
- Removal of native plant communities (riparian, marsh).

Although onsite mitigation is a high priority, it can't interfere with flood capacity or future maintenance activities, and must be cost-effective for the District to carry out.

11. **Select Best Management Practices (BMPs):** If no potentially significant impacts were found in the environmental assessment (Box 8) then the District will select the standard environmental controls (Implementation BMPs) which will apply to the project at this site.

12. **Special mitigation to reduce impact to insignificance:** When residual impacts remain even with standard environmental controls then the District must determine whether there are special measures which should be applied at this site.

13. **Propose withdrawal from mitigation bank:** If it is not physically possible or cost-effective for the District to mitigate at the maintenance site, then the District will propose withdrawal from the District's regional mitigation bank. The mitigation bank concept and specific sites which may serve as long-term restoration sites are currently being developed. The mitigation ratios which will apply to each particular type of impact to replace the functions and values lost during maintenance activities are being negotiated with the resource agencies. The overall size of the mitigation bank will be set up to address the long-term cumulative impact of District activities which may include both maintenance and flood control structures. This will ensure that the cumulative withdrawals from the bank does not exceed the credit available.

14. **Create project specific management plan:** The management plan for the maintenance project will compile the standard environmental controls (Box 11), site-specific mitigation (Box 12) and the proposed withdrawal from the District's regional mitigation bank (Box 13). This sheet contains all of the controls for the project to be carried out. The goal is to use standard forms as much as possible, but to make sure that actual mitigation is scaled to an appropriate level of effort. For onsite mitigation, the specification for the mitigation will include a management plan that includes all aspects of the mitigation. For example, a revegetation plan would include a species list, planting plan, source materials, planting, fertilization and irrigation regime, criteria for success (plant survival percentage, percent cover) and contingencies to deal with failure of the mitigation. The plan will specify intervals for monitoring, measurements to be made, and reporting requirements.

15. ***Do Project:*** District carries out maintenance project.

16. **Conduct follow-up monitoring:** Monitoring will be conducted in accordance with the project specific management plan (Box 14). A summary of monitoring will be reported annually to the Corps.

17. **Can Environmental Controls be improved?** A benefit of monitoring is District feedback on will have mechanisms in place to evaluate how well BMPs are being implemented and their effectiveness in avoiding or mitigating their intended impacts. This information allows the BMP program to adapt to experience or to add new techniques.

18. **Is there a residual impact?** The District will determine, based on monitoring, whether there is a residual impact which has not be fully mitigated by the onsite mitigation measures. For example, a mitigation area may not have achieved the required species density or diversity within a required period of time, or may not be utilized by a particular animal species (e.g. nesting bird of spawning fish) Also, mitigation itself may have produced a secondary or unforeseen impact that needs further mitigation. In either case, in addition to, or instead of continuing the onsite mitigation, the District may have to take an additional withdrawal from the appropriate mitigation bank.

19. **Determine final mitigation bank withdrawal:** The magnitude of the final mitigation bank withdrawal will be based on the deficit between the success of the onsite mitigation and the specified mitigation objective or requirement. The goal of establishing the final mitigation bank withdrawal is to make up the difference in functions and values between the onsite and offsite components of the total compensation.

20. **Project complete.** When the project is done, the effects observed and fully mitigated, then the maintenance project BMP process is complete.

APPENDIX B

GEOLOGIC REVIEW

Prepared By

WARHAM STEJER, ASSISTANT ENGINEERING GEOLOGIST

SANTA CLARA VALLEY WATER DISTRICT

GEOLOGIC REVIEW OF ADOBE CREEK PROPOSED CHANNEL MODIFICATIONS

Subject: Geologic Review of Proposed Channel Modification Sites on Adobe Creek between El Camino Real to Upstream of Moody Road, Santa Clara County, California.

Reviewed By: Warham Stejer under the supervision of Robert Tepel

Date: August 10, 1994

Documents Reviewed: (1) Preliminary Map and General Plan for Adobe Creek from El Camino Real to Upstream of Moody Road, dated May 31, 1994; (2) Report on Adobe Creek Improvement, Project No. NW-1-4, Aerial Photographs Prepared for Santa Clara County Flood Control & Water Conservation District, 1959, Prepared by the Engineering Office of Clyde C. Kennedy; (3) black and white aerial photos, dated 8-12-39; (4) Potential Seismic Hazards in Santa Clara County, California, California Division of Mines and Geology (CDMG) Special Report 107, Prepared by John W. Williams and Thomas H. Rogers, 1974; and (5) a field reconnaissance of the sites on July 12, 1994

Reviewed For: Peter Sheydayi, Scott Wilson, and Randy Talley of Flood Control Planning Division of the Santa Clara Valley Water District

District Facility: Adobe Creek

Review Objectives: Prepare a generalized characterization of the geologic environment at each of the proposed channel and culvert modification sites on Adobe Creek between El Camino Real to Upstream of Moody Road, Santa Clara County, California.

The following comments summarize our preliminary geologic review of each of the proposed channel improvement sites on Adobe Creek.

1. El Camino Real Box Culvert Replacement

a. Literature Review

The following information is summarized from CDMG Special Report 107. This site is mapped as being underlain by older alluvial fan deposits (Qof). The projected thickness of these fan deposits are between 100 and 200 feet. The closest mapped fault to the site is the Shannon fault, which is located approximately 3¾ miles to the southwest of this site. The San Andreas fault is located approximately 5¾ miles southwest of the site. This is an area of moderate potential for earthquake induced liquefaction, lurching, and lateral spreading. The groundwater in this area ranges between 20 to 50 feet below the ground surface (1974 data). The geotechnical hazard in this area may actually be higher due to changes in the level of the groundwater.

b. Field Observations

A field reconnaissance of this site was conducted on July 12, 1994. Both sides of Adobe Creek on the downstream side of El Camino Real are covered with continuous concrete panels. There are no exposures of the native soils or underlying rock materials. On the upstream side of El Camino Real both sides of the creek are covered by entrance transition structures. Older alluvial materials are exposed in both banks of the creek upstream from these structures. These materials are predominantly gravely clay-silt to clayey sand and gravel. No water was observed in the unlined section of the creek.

There were no overhead obstructions noted along either side of El Camino Real at the culvert.

An examination of the condition of the road pavement at this site was not conducted.

c. Conclusions

The subsurface conditions at this site have not been directly examined but may generally be characterized as loose, poorly sorted, alluvium (clays, sands, and gravels with some cobbles and boulders) in the active creek bed. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creek bed and in both of its banks. Surface and groundwater are expected at the site at depths will vary seasonally.

d. Recommendations

Our preliminary assessment of this site indicates that the proposed stream channel modifications are compatible with the local geology pending a complete site-specific investigation. The subsurface conditions at this site should be evaluated by a geologic/geotechnical consultant and design recommendations provided in a written report. The investigation should include but not be limited to an engineering and foundation analysis of the subsurface materials, groundwater conditions, the seismic response characteristics of the site under design earthquake conditions and the potential for earthquake induced liquefaction, lurching, and lateral spreading.

2. Yerba Buena Avenue Box Culvert Replacement

a. Literature Review

The following information is summarized from CDMG Special Report 107. This site is mapped as being underlain by older alluvial fan deposits (Qof). The projected thickness of the alluvium at this site is between 0 and 100 feet. The closest mapped fault to the site is the Shannon fault, which is located approximately 2¼ miles to the southwest. The San Andreas fault is located approximately 4¾ miles southwest of the site. This is an area of low potential for earthquake induced liquefaction, lurching, and lateral spreading. The groundwater in this area is deeper than 50 feet below the ground surface. The geotechnical hazard in this area may actually be higher due to changes in the level of the groundwater.

b. Field Observations

A field reconnaissance of this site was conducted on July 12, 1994. Both sides of Adobe Creek on the downstream side of Yerba Buena are covered by sacked concrete slope protection (SCSP) and an exit transition structure. There are no exposures of the native soils or underlying rock materials. On the upstream side of Yerba Buena the left side of the creek is covered by SCSP. There are no exposures of the native soils or underlying rock materials. Young alluvial materials are exposed in the right bank of the creek upstream from the culvert. This material is predominantly gravely clay. No water was observed in the unlined section of the creek.

The road pavement has settled and been patched on both sides of the box culvert. On the right side of the culvert the settlement is on the order of 4 inches; on the left side about 10 inches. There are overhead wires along the downstream side of Yerba Buena and an 8-inch diameter metal pipe running along the upstream side of the culvert.

c. Conclusions

The subsurface conditions at this site have not been directly examined but may generally be characterized as loose, poorly sorted, alluvium (clays, sands, and gravels with some cobbles and boulders) in the active creek bed. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creek bed and in both of its banks. Surface and groundwater are expected at the site at depths that will vary seasonally.

d. Recommendations

Our preliminary assessment of this site indicates that the proposed stream channel modifications are compatible with the local geology pending a complete site-specific investigation. The subsurface conditions at this site should be evaluated by a qualified geologic/geotechnical consultant and design recommendations provided in a written report. The investigation should include but not be limited to an engineering and foundation analysis of the subsurface materials at this site, groundwater conditions, the seismic response characteristics of the site under design earthquake conditions, and the potential for earthquake induced liquefaction, lurching, and lateral spreading.

The culvert replacement at Yerba Buena is about 20 to 25 feet from an existing residence. Typical construction for this type of culvert replacement would be a slab type foundation. If additional foundation support is found necessary, drilled piers could be used instead of driving piles.

3. Foothill Expressway Box Culvert Addition

a. Literature Review

The following information is summarized from CDMG Special Report 107. This site is mapped as being underlain by older alluvial fan deposits (Qof). The projected thickness of the alluvium at this site is between 0 and 100 feet. The closest mapped fault to the site is the Shannon fault, which is located approximately 2 miles to the southwest. The San Andreas fault is located approximately 4¾ miles southwest of the site. This is an area of low potential for earthquake induced liquefaction, lurching, and lateral spreading. The geotechnical hazard in this area may actually be higher due to changes in the level of the groundwater.

b. Field Observations

A field reconnaissance of this site was conducted on July 12, 1994. Both sides of Adobe Creek on the downstream side of Foothill Expressway are covered by an exit transition structure for a distance of approximately 50 feet. Downstream of the transition structure both sides of the creek are covered with residual soils and dense vegetation. Older alluvial materials are exposed in both bank of the creek approximately 200 feet downstream from this transition structure. This material is predominantly gravely clay with sand.

Running water was not observed in the unlined section of the creek bed downstream from these improvements.

On the upstream side of Foothill Expressway both sides of the creek are covered by an entrance transition structure. Older alluvial materials are exposed in both banks of the creek upstream from these improvements. This material is predominantly gravely clay. Running water was observed in the unlined section of the creek on the upstream side of the culvert only.

The road pavement and overhead obstructions were not evaluated at this location.

According to Mr. Sheydayi the embankment that supports Foothill Expressway is soil material that was placed on top of older fill of a preexisting railroad bed. There was no indication of this material observed in the field.

c. Conclusions

The subsurface conditions at this site have not been directly examined but may generally be characterized as loose, poorly sorted, alluvium (clays, sands, and gravels with some cobbles and boulders) in the active creek bed. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creek bed and in both its banks. Surface and groundwater are expected at the site at depths that will very seasonally.

d. Recommendations

Our preliminary assessment of this site indicates that the proposed stream channel modifications should be compatible with the local geology pending a complete site-specific investigation. The subsurface conditions at this site should be evaluated by a geologic/geotechnical consultant and design recommendations provided in a written report. The investigation should include but not be limited to an engineering and foundation analysis of the subsurface materials, groundwater conditions and the seismic response characteristics of the site under design earthquake conditions, and the potential for earthquake induced liquefaction, lurching, and lateral spreading. The old railroad fill could have an impact on the proposed improvements and should be evaluated.

4. Downstream of West Edith Avenue Channel Modification

a. Literature Review

The following information is summarized from CDMG Special Report 107. This site is mapped as being underlain by nonmarine sedimentary materials (QTs). These materials are locally know as the Santa Clara formation. The closest mapped fault to the site is the Shannon fault, which is located approximately 2 miles to the southwest. The San Andreas fault is located approximately 4¾ miles southwest of the site. This is an areas of high potential for earthquake induced landslides.

b. Field Observations

A field reconnaissance of this site was conducted on July 12, 1994. This site occupies a reach of Adobe Creek that extends approximately 850 feet down stream from West Edith Avenue. At this location both sides of Adobe Creek are covered (randomly) by wood, stone, brick, sacked concrete slope protection, gunite/shotcrete, and concrete walls most of which are in poor condition. There are two small exposures of the underlying native soil and rock materials on the left side of the creek. This material is older alluvium, clayey sand, and gravel with some gravely clay with sands. Two small isolated pools of water were observed in the unlined bed of the creek. Running water was observed in the unlined part of the creek immediately below the lined-section of the creek in this study area. The left side of the creek downstream of the wall structures is supported by 12- to 14-foot high vertical bank exposing moderately consolidated older alluvium predominantly gravely clay with sand to clayey sand and gravel.

Water was not observed on the upstream side of the culvert at West Edith Avenue.

This section of the creek is lined on both banks with very large (40 to 80 feet tall) trees which may create overhead obstructions for equipment working in this area.

c. Conclusions

The subsurface conditions at this site have not been directly examined but may generally be characterized as loose poorly sorted alluvium (clays, sands, and gravels with some cobbles and boulders) in the active stream channel. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creek bed and in both of its banks. Surface and groundwater are expected at the site at depths that will vary seasonally.

d. Recommendations

Our preliminary assessment of this site indicates that the proposed stream channel modifications are compatible with the local geology pending a complete site-specific investigation. The subsurface conditions at this site should be evaluated by a geologic/geotechnical consultant and design recommendations provided in a written report. The investigation should include but not be limited to an engineering and foundation analysis of the subsurface materials at this site, groundwater conditions, the seismic response characteristics of the site under design earthquake conditions, and the potential for *earthquake induced liquefaction, lurching, and lateral spreading.*

5. Burke Road Box Culvert Replacement

a. Literature Review

The following information is summarized from CDMG Special Report 107. This site is mapped as being underlain by older alluvial fan deposits (Qof). The projected thickness of the alluvium at this site is between 0 and 100 feet. The closest mapped fault to the site is the Shannon which is located approximately 1½ miles to the southwest. The San Andreas fault is located approximately 4½ miles southwest of the site. This is an area of moderate potential for earthquake induced liquefaction, lurching, and lateral spreading. The groundwater in this area ranges 20 to 50 feet below the ground surface (1974 data). The geotechnical hazard in this area may actually be higher due to changes in the level of the groundwater.

b. Field Observations

A field reconnaissance of this site was conducted on July 12, 1994. Both sides of Adobe Creek on the downstream side of Burke Road are covered by low stone walls and dense vegetation. There are no exposures of the native soils or underlying rock materials. On the upstream side of Burke Road the right side of the creek is covered by sacked concrete slope protection and dense vegetation. There are no exposures of the native soils or underlying rock materials. Older alluvial materials are exposed in the left bank of the creek upstream from the culvert. This material is predominantly gravely clay. There is some old fill material that has been placed on the upper portion of this section of the creek bank.

No water was observed in the active channel of the creek on either side of the culvert.

Transverse cracks in the paving of Burke Road have developed on both sides of the box culvert. However, there does not appear to be any settlement on either side of the culvert.

There are overhead wires along the upstream side of Burke Road and an 8-inch diameter Bay tree leaning over the road from the downstream side of the culvert.

c. Conclusions

The subsurface conditions at this site have not been directly examined but may generally be characterized as loose poorly sorted alluvium (clays, sands, and gravels with some cobbles and boulders) in the active creek bed. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creek bed and in both of its banks. Surface and groundwater are expected at the site at depths that will very seasonally.

d. Recommendations

Our preliminary assessment of this site indicates that the proposed stream channel modifications are compatible with the local geology pending a complete site-specific investigation. The subsurface conditions at this site should be evaluated by a geologic/geotechnical consultant and design recommendations provided in a written report. The investigation should include but not be limited to an engineering and foundation analysis of the subsurface materials at each site, groundwater conditions, the seismic response characteristics of the site under design earthquake conditions, and the potential for earthquake induced liquefaction, lurching, and lateral spreading.

6. O'Keefe Lane Box Culvert Replacement

a. Literature Review

The following information is summarized from CDMG Special Report 107. This site is mapped as being underlain by older alluvial fan deposits (Qof) or possibly older stream alluvium deposits (Qoal). The projected thickness of the alluvium at this site is between 0 and 100 feet. The closest mapped fault to the site is the Shannon fault which is located approximately ¾ miles to the southwest. The San Andreas fault is located approximately 4¼ miles southwest of the site. This is an area of high potential for earthquake induced liquefaction, lurching, and lateral spreading. The water table is 10 to 20 feet below ground surface (1974 data). The geotechnical hazard in this area may actually be higher due to changes in the level of the groundwater.

b. Field Observations

A field reconnaissance of this site was conducted on July 12, 1994. Both sides of Adobe Creek on the downstream side of O'Keefe Road are supported by 4- to 8-foot high vertical and under cut banks exposing older alluvium, predominantly gravely clay. Large rip-rap boulders have been placed at the downstream edge of the exit transition structure on this side of the culvert. Both sides of Adobe Creek on the upstream side of O'Keefe Road are covered by dense vegetation. There are no exposures of the native soils or underlying rock materials. Running water was observed in the active channel of the creek on both sides of the culvert.

The road pavement has cracked on both sides of this culvert and has settled ½ to ¾ of an inch towards the downstream side of O'Keefe Road. There does not appear to be any settlement of the pavement on the upstream side of O'Keefe Road. There are overhead wires along both side of O'Keefe Road at the culvert. There are several large trees on the upstream side of the road and one on the downstream side. Limbs from these trees may create an overhead obstruction.

c. Conclusions

The subsurface conditions at this site have not been directly examined but may generally be characterized as loose poorly sorted alluvium (clays, sands, and gravels with some cobbles and boulders) in the active creek bed. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creek bed and in both of its banks. Surface and groundwater are expected at the site at depths that will very seasonally.

d. Recommendations

Our preliminary assessment of this site indicates that the proposed stream channel modifications are compatible with the local geology pending a complete site-specific investigation. The subsurface conditions at this site should be evaluated by a geologic/geotechnical consultant and design recommendations provided in a written report. The investigation should include but not be limited to an engineering and foundation analysis of the subsurface materials at each site, groundwater conditions, the seismic response characteristics of the site under design earthquake conditions, and the potential for earthquake induced liquefaction, lurching, and lateral spreading.

7. Foothill College Channel Modification

a. Literature Review

The following information is summarized from CDMG Special Report 107. This site is mapped as being underlain by older alluvial fan deposits (Qof) and/or older stream alluvium (Qoal), Franciscan sandstone (fs), and Franciscan greenstone (fg). The projected thickness of the alluvium at this site is between 0 and 100 feet. The closest mapped fault to the site is the Shannon fault which is located approximately ¼ miles to the south. The San Andreas fault is located approximately 3½ miles southwest of the site. This is an area of high potential for earthquake induced liquefaction, lurching, and lateral spreading. The water table in this area is 10 to 20 feet below ground surface. The geotechnical hazard in this area may actually be higher due to changes in the level of the groundwater.

b. Field Observations

A field reconnaissance of this site was conducted on July 12, 1994. This site occupies a reach of Adobe Creek that extends from the downstream end of the El Monte Road culvert to the upstream end of the culvert at the access road to Foothill College.

The left side of the creek is unlined for most of this reach exposing the underlying native soil and rock materials. This material are young alluvium predominantly clayey sand and gravel with some gravely clay with sands. The right side of the channel is lined intermittently with concrete. The middle and upper sections of this area are obscured by dense vegetation and surface soils. The underlining rock materials were not accessible for direct examination in these areas. The underlying native soil and rock materials could be observed in the lower portion of this section of the creek. Here the materials are serpentine and graywake sandstone overlain by young alluvium that is predominantly sand and gravel with some clay. The serpentine and graywake sandstone are exposed in and between two small (12-foot by 10-foot) landslides. These two landslides are at the lower end of this section of the creek. Rip-rap boulders have been placed in the scarp (hollow) created by both of these landslides.

Water was observed flowing through this entire reach of the creek.

There are utility poles with overhead wires along the right side of the creek extending downstream from the El Monte Road culvert for a distance of approximately 250 feet.

The area of a reported landslide repair (discussed below) located on the southeast (right) side of the creek was examined during our site visit. No geologic evidence of the reported landslide or its repair was observed on the slope above the creek. Pavement damage commonly associated with landslide distress was not observed in the section of El Monte Road that was reportedly repaired in conjunction with the mediation of this landslide.

The following history has been developed based on information provided to us by the Foothill College Chief of Maintenance and Mr. Peter Sheydayi and Mr. Scott Wilson of the SCVWD. The southeast (right) side of Adobe Creek in this reach of the creek has had a past history of slope instability. A landslide on this side of the creek closed the south bound lane of El Monte Road at one time. Documentation of the size, shape, location, type, and cause of this landslide was not available for our review. This landslide was repaired by a private contractor working for the Town of Los Altos Hills. There is no apparent documentation of the nature, extent, and quality of the repair work that was done. Based on the lack of information regarding this landslide, and the adequacy of the repair work that was done, the future performance of this portion of the slope can not be evaluated at this time.

Evidence of seepage has been observed in two locations in the road cut on the up slope side of El Monte Road in the vicinity of the reported landslide repair. Surface water from El Monte Road is currently being discharged on to the slope above the northwest side of Adobe Creek.

c. Conclusions

This section of the creek lies in an area that has experienced past slope instability. It would be prudent to treat this area as unstable from a geological standpoint, and subject to future slope failures. A site-specific subsurface investigation of this area would help to evaluate the potential for further slope instability.

The subsurface conditions at this site have not been directly examined but may generally be characterized as loose, poorly sorted, alluvium (clays, sands, and gravels with some cobbles and boulders) in the active creek bed. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creek bed and in the left bank and the right bank of the creek upstream from the two small landslides. The serpentine and graywake rock materials may be found in the right bank of the creek at and downstream of the two small landslides described above.

The serpentine and graywake rock materials seem to be associated with the two landslides discussed above. Other areas underlain by these two rock types may also be prone to slope instability.

Surface and groundwater are expected at the site at depths that will vary seasonally.

d. Recommendations

Our preliminary assessment of this site indicates that the proposed stream channel modifications should be compatible with the local geology pending a complete site-specific investigation. The subsurface conditions at this site should be evaluated by a geologic/geotechnical consultant and design recommendations provided in a written report. The investigation should include but not be limited to an engineering and foundation analysis of the subsurface materials at each site, groundwater conditions, the seismic response characteristics of this site under design earthquake conditions, and the potential for earthquake induced liquefaction, lurching, lateral spreading, and landsliding. More information on the landslide that closed El Monte Road should be gathered in order to make a better assessment of its impact on the proposed channel modifications.

8. Tepa Way Box Culvert Replacement

a. Literature Review

The following information is summarized from CDMG Special Report 107. This site is mapped as being underlain by older stream alluvium (Qoal). The projected thickness of the alluvium at this site is between 0 and 100 feet. The closest mapped fault to the site is the Shannon fault, which is located approximately ¼ miles to the south. The San Andreas fault is located approximately 3 miles southwest of the site. This area has a high potential for liquefaction, lurching, and lateral spreading. The water table may be 10 to 20 feet below surface (1974 data). The geotechnical hazard in this area may actually be higher due to changes in the level of the groundwater.

b. Field Observations

A field reconnaissance of this site was conducted on July 12, 1994. Both sides of Adobe Creek on the downstream side of Tepa Way are covered by residual soil, vegetation, concrete rubble, and trash. There are no exposures of the underlying rock materials in this area. On the upstream side of Tepa Way, approximately 50 feet, older alluvial materials are exposed on both side of the creek. This material is predominantly gravely clay.

Water was observed flowing through this entire reach of the creek.

The road pavement has cracked ⅛ inch to ¼ inch wide and settled ¼ inch to 2 inches on both sides of the culvert at its down stream end.

c. **Conclusions**

The subsurface conditions at this site have not been directly examined but may generally be characterized as loose poorly sorted alluvium (clays, sands, and gravels with some cobbles and boulders) in the active creek bed. Moderately consolidated older alluvium (clays, sands, and gravels with some cobbles and boulders) may be found at variable depths below the active creek bed and in both its banks. Surface and groundwater are expected at the site at depths that will very seasonally.

d. **Recommendations**

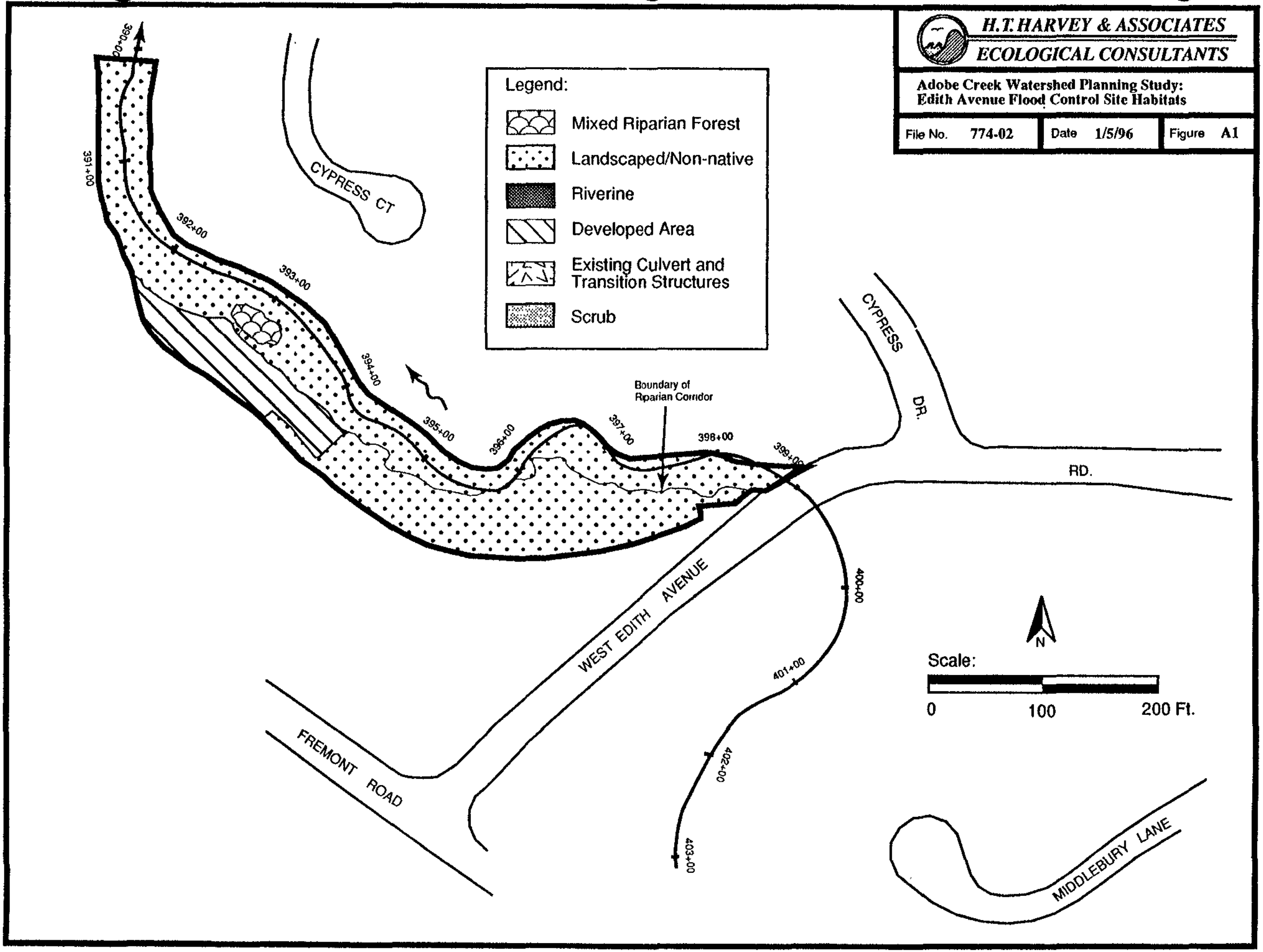
Our preliminary assessment of this site indicates that the proposed stream channel modifications are compatible with the local geology pending a complete site-specific investigation. The subsurface conditions at this site should be evaluated by a geologic/geotechnical consultant and design recommendations provided in a written report. The investigation should include but not be limited to an engineering and foundation analysis of the subsurface materials at each site, groundwater conditions, the seismic response characteristics of the site under design earthquake conditions, and the potential for earthquake induced liquefaction, lurching, and lateral spreading

APPENDIX C

SANTA CLARA VALLEY WATER DISTRICT ADOBE CREEK WATERSHED PLANNING STUDY ENVIRONMENTAL IMPACT REPORT BIOLOGICAL APPENDICES

Prepared By

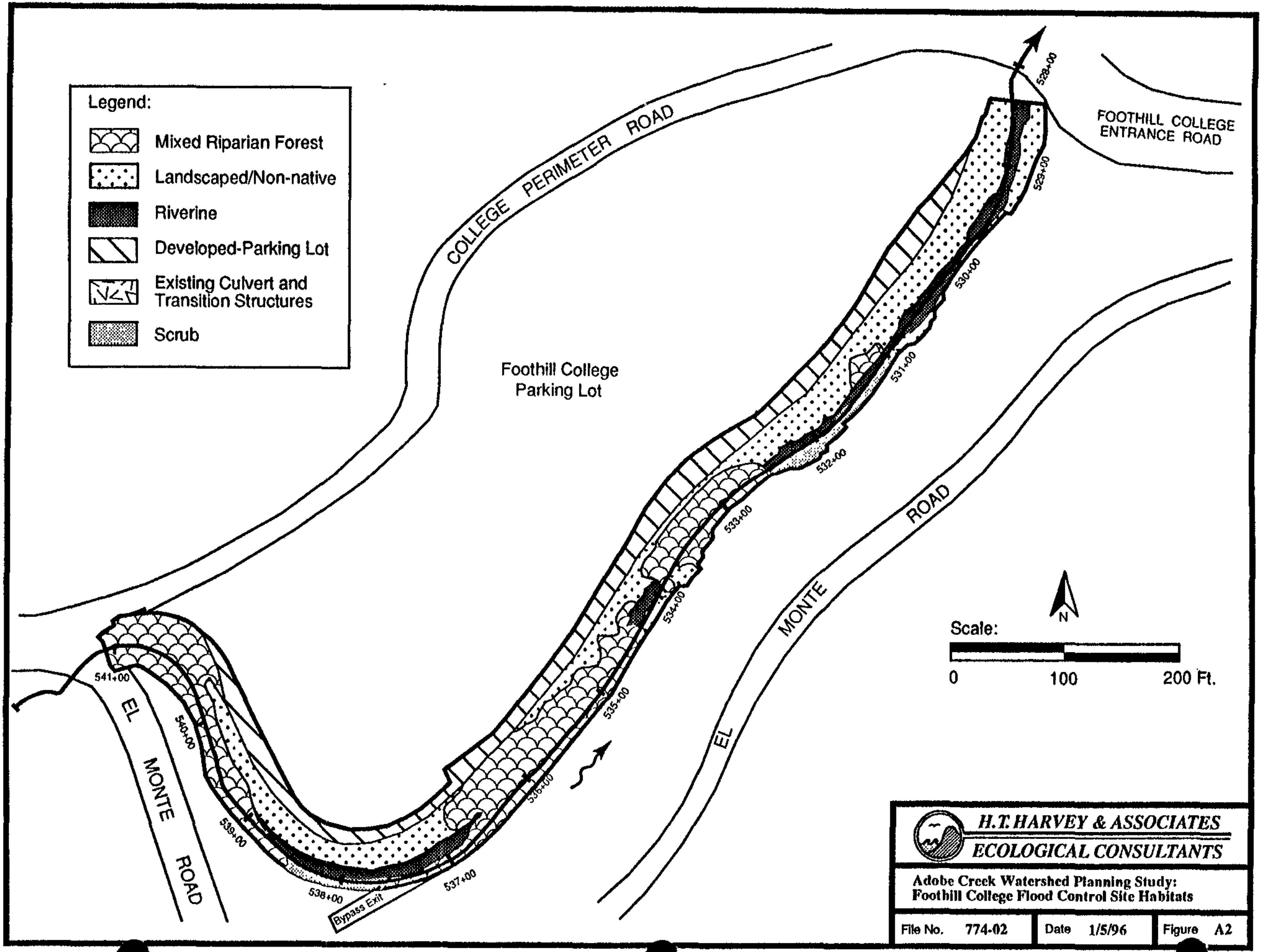
H.T. HARVEY AND ASSOCIATES



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek Watershed Planning Study: Edith Avenue Flood Control Site Habitats

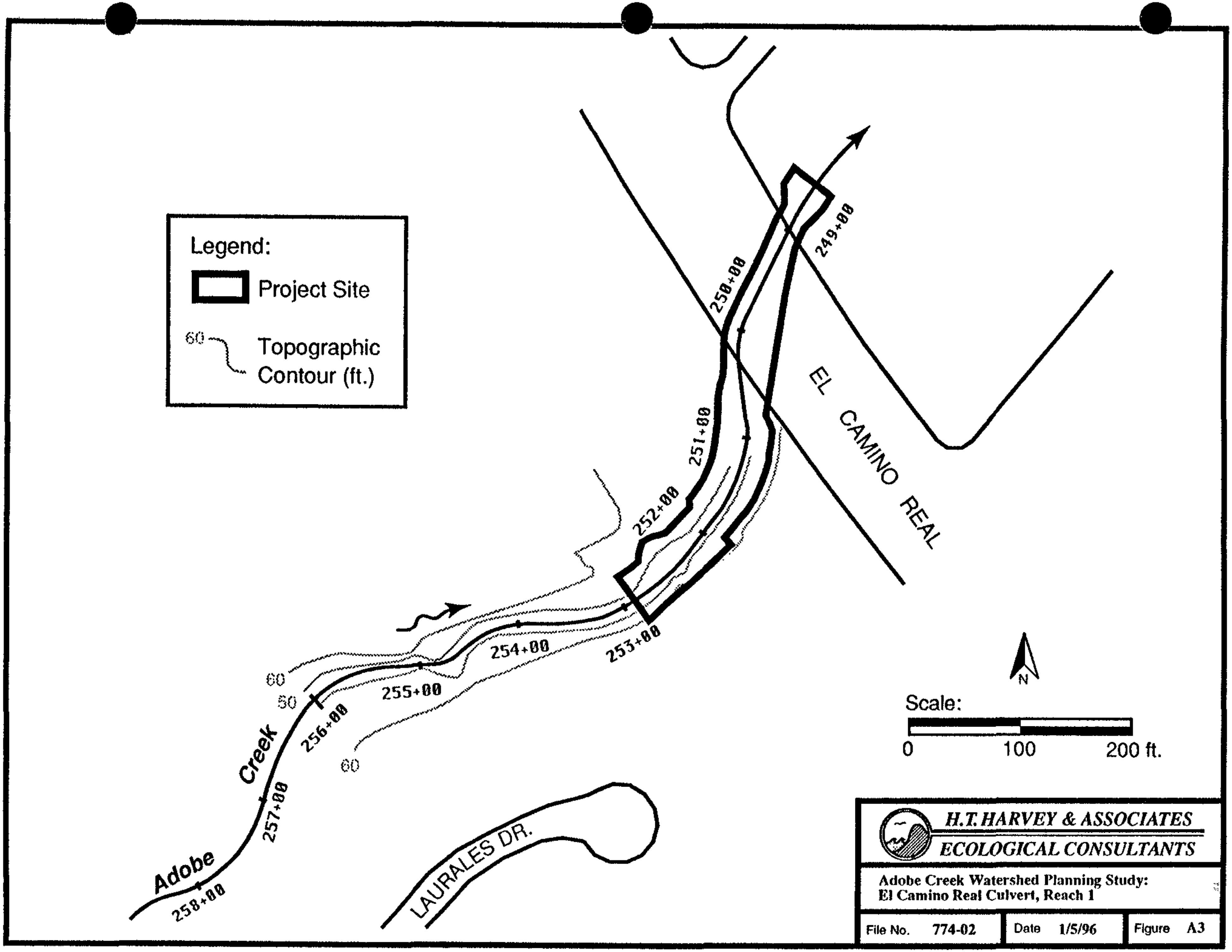
File No. 774-02 | Date 1/5/96 | Figure A1



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek Watershed Planning Study:
Foothill College Flood Control Site Habitats

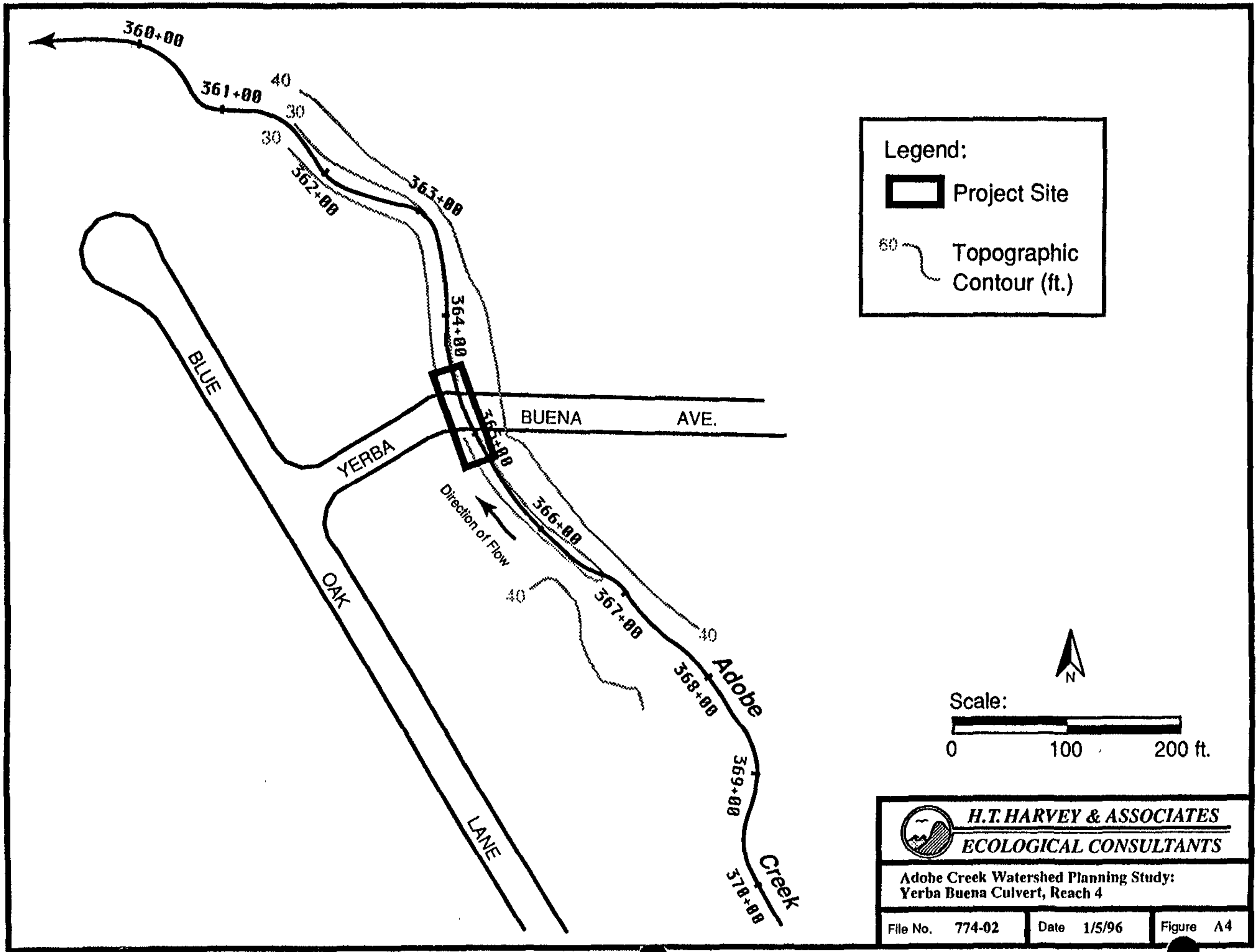
File No. 774-02 | Date 1/5/96 | Figure A2



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek Watershed Planning Study:
El Camino Real Culvert, Reach 1

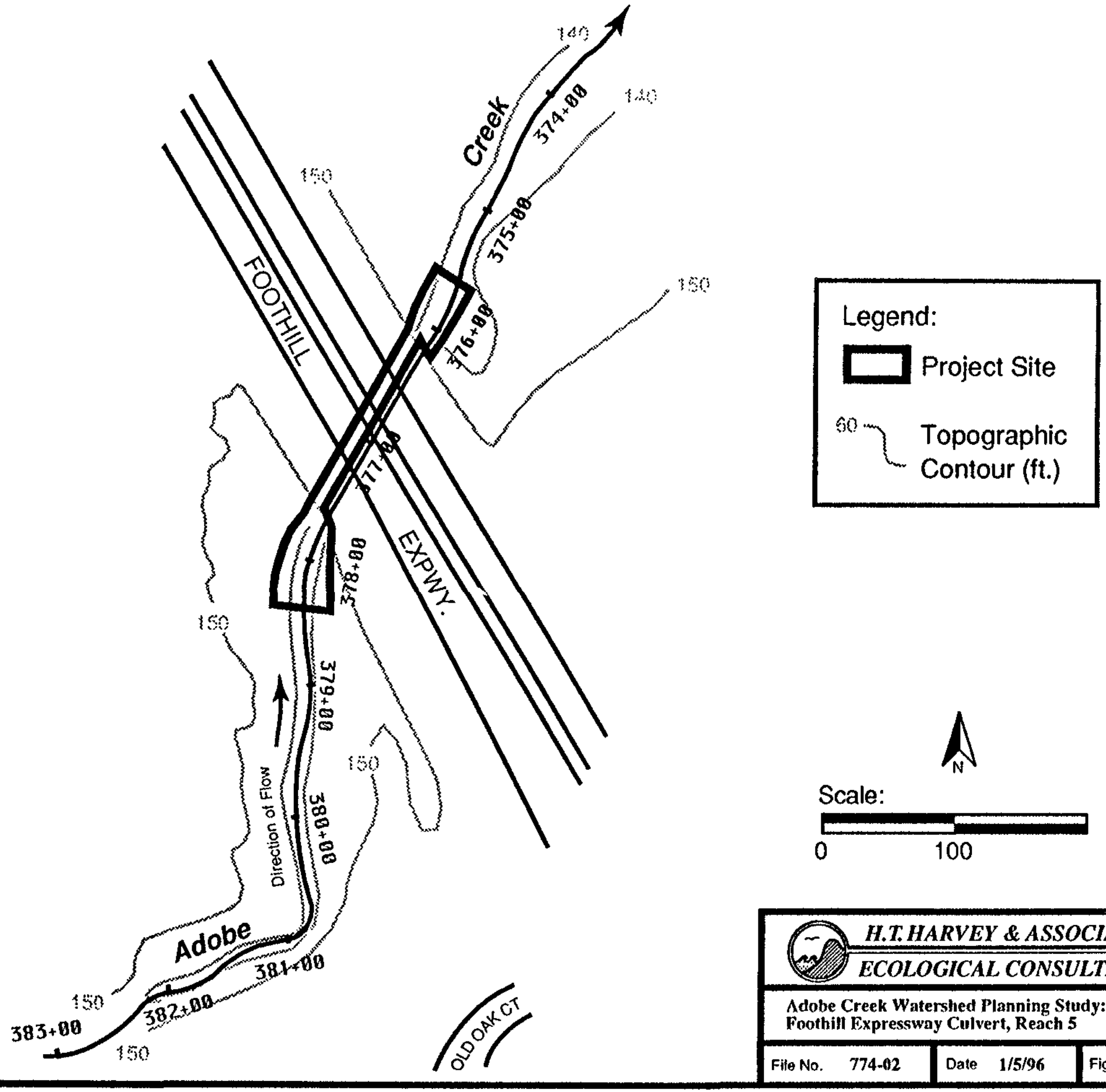
File No. 774-02	Date 1/5/96	Figure A3



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek Watershed Planning Study:
Yerba Buena Culvert, Reach 4

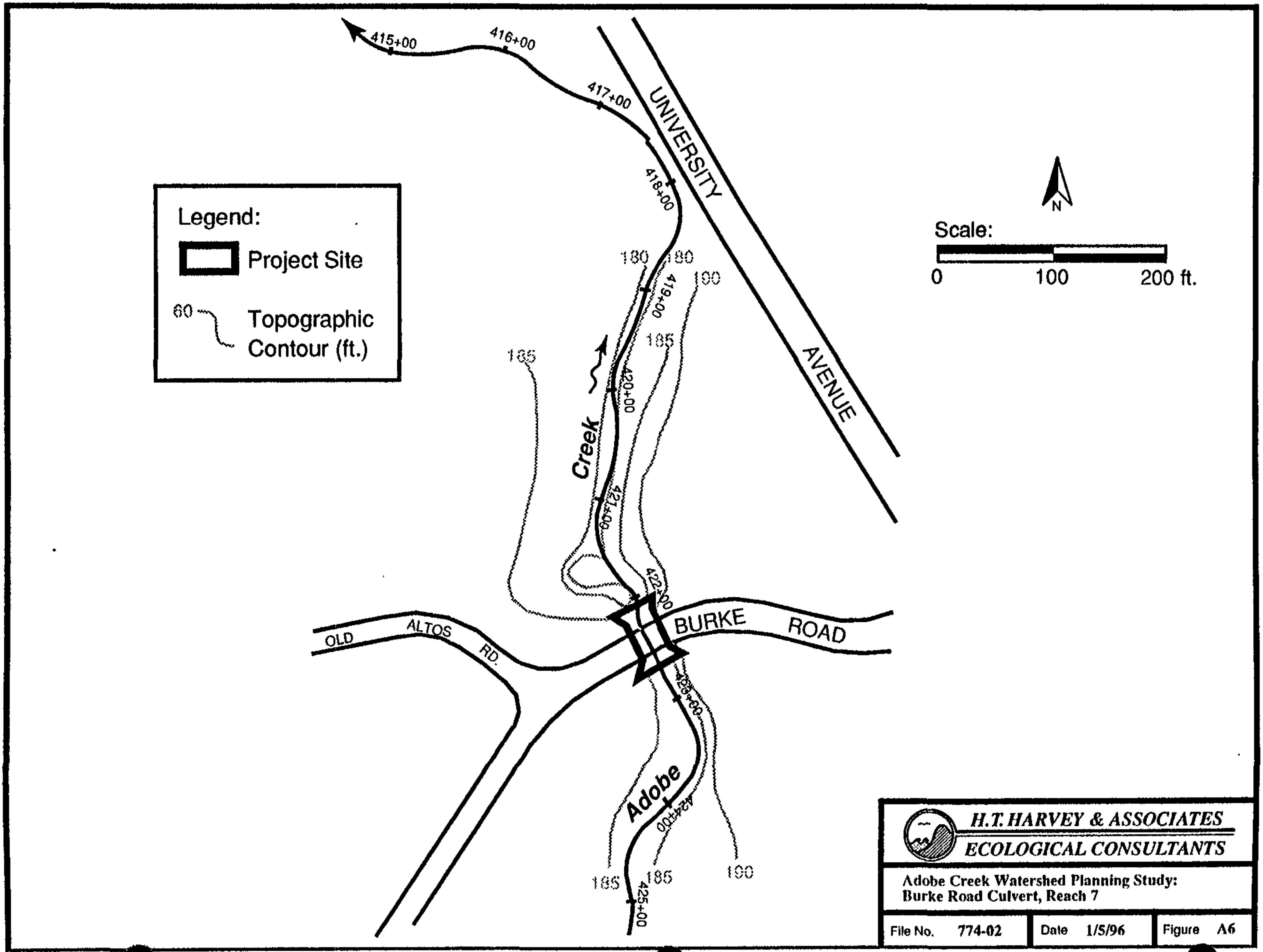
File No. 774-02 | Date 1/5/96 | Figure A4



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek Watershed Planning Study:
Foothill Expressway Culvert, Reach 5

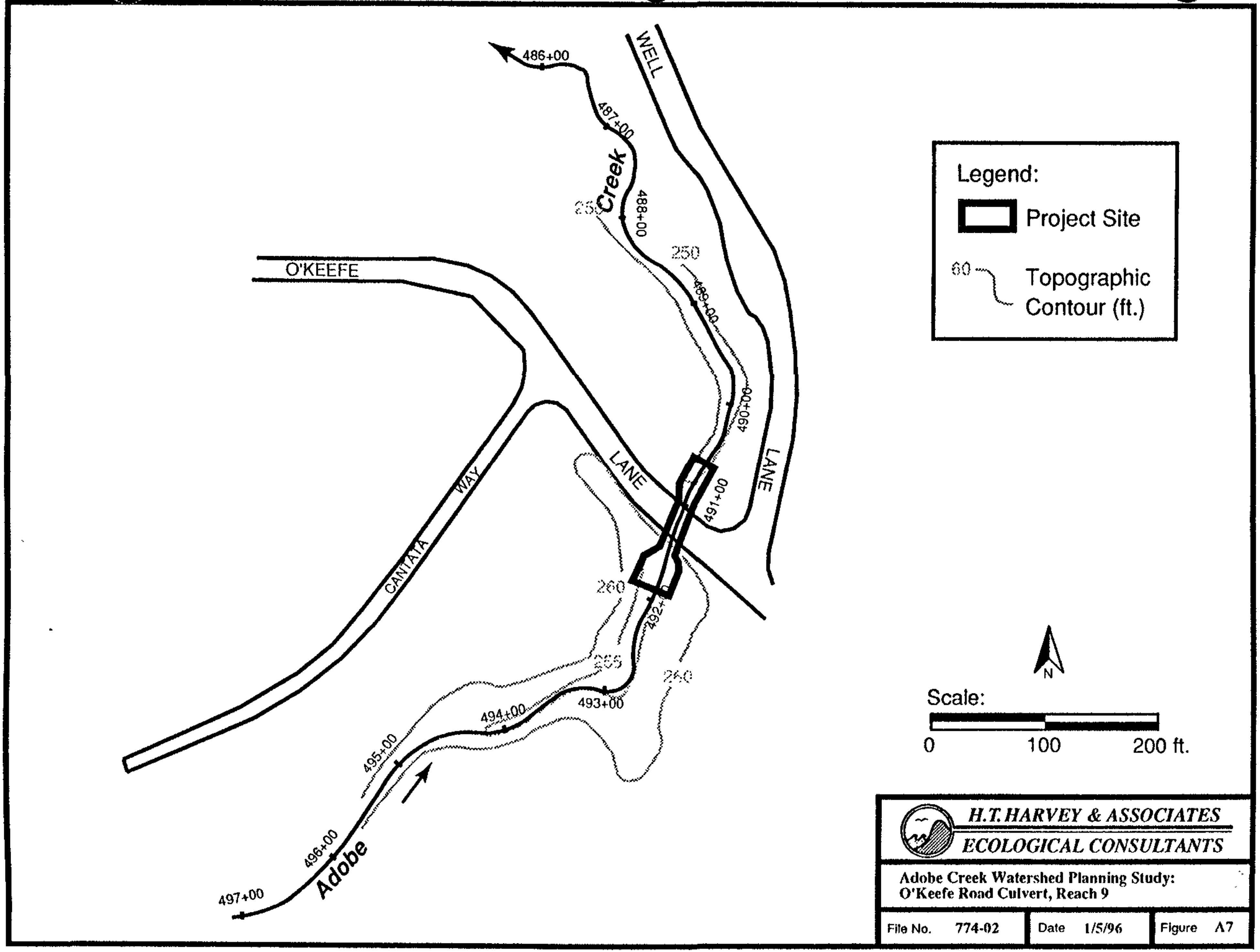
File No. 774-02	Date 1/5/96	Figure A5



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek Watershed Planning Study:
Burke Road Culvert, Reach 7

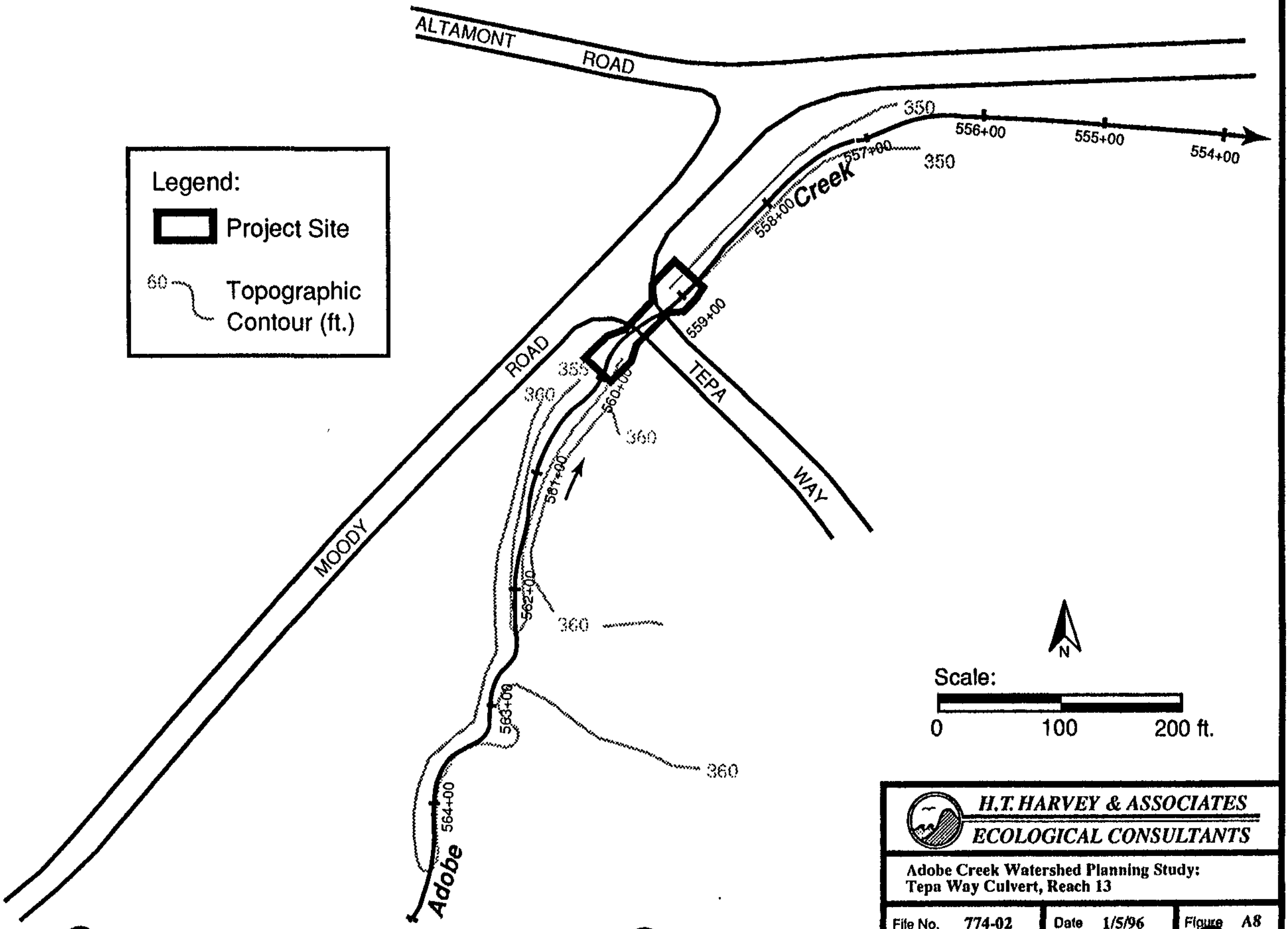
File No.	774-02	Date	1/5/96	Figure	A6



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek Watershed Planning Study:
O'Keefe Road Culvert, Reach 9

File No. 774-02
Date 1/5/96
Figure A7



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek Watershed Planning Study:
Tepa Way Culvert, Reach 13

File No. 774-02 | Date 1/5/96 | Figure A8

Plant Species Observed at Adobe Creek Project Sites

FAMILY NAME	SCIENTIFIC NAME	COMMON NAME
ANACARDIACEAE	*Schinus molle*	Peruvian pepper tree
	Toxicodendron diversilobum	poison oak
APIACEAE	*Coninum maculatum*	poison hemlock
	Foeniculum vulgare	fennel
APOCYNACEAE	*Nerium oleander*	oleander
	Vinca major	periwinkle
ARALIACEAE	*Hedera helix*	English ivy
ASTERACEAE	*Artemisia douglasiana*	mugwort
	Baccharis pilularis	coyote brush
	Carduus pycnocephalus	Italian thistle
	Cirsium vulgare	bull thistle
	Lactuca serriola	prickly lettuce
	Xanthium strumarium	cocklebur
	Picris echioides	bristly ox tongue
BRASSICACEAE	*Brassica nigra*	black mustard
	Rorippa nasturtium-aquaticum	true watercress
CAPRIFOLIACEAE	*Symphoricarpus rivularis*	common snowberry
	Sambucus mexicana	blue elderberry
CORNACEAE	*Cornus californica*	western red dogwood
	Cornus glabrata	brown dogwood
CUPRESSACEAE	*Cupressus sp.*	cypress
CYPERACEAE	*Cyperus eragrostis*	tall umbrella sedge
	Scirpus microcarpus	small-fruited bulrush
FABACEAE	*Acacia sp.*	acacia
	Robinia psuedo-acacia	black locust
FAGACEAE	*Quercus agrifolia*	coast live oak
	Quercus kellogii	black oak
	Quercus lobata	valley oak
HIPPOCASTANACEAE	*Aesculus californicus*	California buckeye
JUGLANDACEAE	*Juglans californica var. hindsii*	California black walnut
	Juglans regia	English walnut
LAURACEAE	*Umbellularia californica*	California bay
MALVACEAE	*Malva sp.*	mallow
MYRTACEAE	*Eucalyptus globulus*	blue gum
OLEACEAE	*Ligustrum sp.*	Oregon ash
ONAGRACEAE	*Epilobium adenocaulon*	willow herb
PINACEAE	*Pinus sp.*	pine
POACEAE	*Avena barbata*	slender wild oats

Plant Species List continued.

FAMILY NAME	SCIENTIFIC NAME	COMMON NAME
POACEAE	*Bromus diandrus*	ripgut brome
	Bromus hordeceus	soft chess
	Cyndon dactylon	Bermuda grass
	Hordeum murinum ssp. leporinum	Farmer's foxtail
	Lolium multiflorum	Italian ryegrass
	Polypogon monspeliensis	rabbitfoot grass
POLYGONACEAE	*Polygonum lapathifolium*	prostrate knotweed
	Rumex crispus	curly dock
ROSACEAE	*Cotoneaster sp.*	cotoneaster
	Heteromeles arbutifolia	toyon
	Prunus emarginata	bitter cherry
	Prunus ilicifolia	holly-leaved cherry
	Rosa californica	California rose
	Rubus procerus	Himalaya blackberry
	Rubus ursinus	California blackberry
RUBIACEAE	*Galium sp.*	bedstraw
SALICACEAE	*Salix babylonica*	weeping willow
	Salix laevigata	red willow
	Salix lasiolepis	arroyo willow
SCROPHULARIACEAE	*Veronica catenata*	pink water speedweed
SIMAROUBACEAE	*Ailanthus altissima*	tree of heaven
SOLANACEAE	*Solanum nigrum*	black nightshade
ULMACEAE	*Ulmus sp.*	elm
URTICACEAE	*Urtica dioica ssp. holosericea*	stinging nettle
VITACEAE	*Vitis californica*	California wild grape
TAXODIACEAE	*Sequoia sempervirens*	coast redwood

The species list is arranged alphabetically by family name for all vascular plants encountered during a plant survey. Plants are also listed alphabetically within each family. In some cases it was not possible to accurately identify a particular plant to the species level due to the absence of specific anatomic features.

Common Name	Scientific Name	Status	Predicted	Occurred
CLASS: AMPHIBIA				
ORDER: CAUDATA (Salamanders)				
FAMILY: SALAMANDRIDAE (Newts)				
Rough-skinned Newt	*Taricha granulosa*		x	
California Newt	*Taricha torosa*		x	
Coast Range Newt	*T. t. torosa*	SC	x	
FAMILY: PLETHODONITDAE (Lungless Salamanders)				
Ensatina	*Ensatina eschscholtzi*		x	
California Slender Salamander	*Batrachoseps attenuatus*		x	
Arboreal Salamander	*Aneides lugubris*		x	
ORDER: SALIENTIA (Frogs and Toads)				
FAMILY: BUFONIDAE (True Toads)				
Western Toad	*Bufo boreas*			x
FAMILY: HYLIDAE (Treefrogs and Relatives)				
Pacific Treefrog	*Pseudacris regilla*			x
FAMILY: RANIDAE (True Frogs)				
Bullfrog	*Rana catesbeiana*		x	
CLASS: REPTILIA				
ORDER: TESTUDINATA(Turtles)				
FAMILY: EMYDIDAE (Pond and Marsh Turtles)				
Southwestern Pond Turtle	*C. marmorata pallida*	SC,FC2	x	
ORDER: SQUAMATA (Lizards and Snakes)				
SUBORDER: SAURIA (Lizards)				
FAMILY: IGUANIDAE (Iguanids)				
Western Fence Lizard	*Sceloporus occidentalis*		x	
Side-blotched Lizard	*Uta stansburiana*		x	
FAMILY: SCINCIDAE (Skinks)				
Western Skink	*Eumeces skiltonianus*		x	
FAMILY: TEIIDAE (Whiptails and Relatives)				
Western Whiptail	*Cnemidophorus tigris*		x	
FAMILY: ANGUIDAE (Alligator Lizards and Relatives)				
Southern Alligator Lizard	*Gerrhonotus multicarinatus*		x	
SUBORDER: SERPENTES (Snakes)				
FAMILY: COLUBRIDAE (Colubrids)				
Racer	*Coluber constrictor*		x	
Gopher Snake	*Pituophis melanoleucus*		x	
Common Kingsnake	*Lampropeltis getulus*		x	
Common Garter Snake	*Thamnophis sirtalis*		x	
CLASS: AVES				
ORDER: CICONIIFORMES (Herons, Storks, Ibises, and Relatives)				
FAMILY: ARDEIDAE (Herons and Bitterns)				
Great Blue Heron	*Ardea herodias*		x	
Green Heron	*Butorides striatus*		x	
Black-crowned Night Heron	*Nycticorax nycticorax*		x	
ORDER: ANSERIFORMES (Screamers, Ducks, and Relatives)				
FAMILY: ANATIDAE (Swans, Geese, and Ducks)				
Wood Duck	*Aix sponsa*		x	
Mallard	*Anas platyrhynchos*		x	
ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)				
FAMILY: CATHARTIDAE (American Vultures)				
Turkey Vulture	*Cathartes aura*		x	
Sharp-shinned Hawk	*Accipiter striatus*	SC	x	
Cooper's Hawk	*Accipiter cooperii*	SC	x	

Common Name	Scientific Name	Status	Predicted	Occurred
Red-shouldered Hawk	*Buteo lineatus*			x
Red-tailed Hawk	*Buteo jamaicensis*		x	
FAMILY: FALCONIDAE (Caracaras and Falcons)				
American Kestrel	*Falco sparverius*			x
ORDER: GALLIFORMES (Megapodes, Currassows, Pheasants, and Relatives)				
FAMILY: PHASIANIDAE (Quails, Pheasants, and Relatives)				
California Quail	*Callipepla californica*			x
ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and Relatives)				
FAMILY: CHARADRIIDAE (Plovers and Relatives)				
Killdeer	*Charadrius vociferus*		x	
FAMILY: LARIDAE (Gulls and Terns)				
California Gull	*Larrs californicus*		x	
Ring-billed Gull	*Larus delawarensis*		x	
ORDER: COLUMBIFORMES (Pigeons and Doves)				
FAMILY: COLUMBIDAE (Pigeons and Doves)				
Rock Dove	*Columba livia*			x
Band-tailed Pigeon	*Columba fasciata*			x
Mourning Dove	*Zenaida macroura*			x
ORDER: STRIGIFORMES (Owls)				
FAMILY: TYTONIDAE (Barn Owls)				
Barn Owl	*Tyto alba*		x	
FAMILY: STRIGIDAE (Typical Owls)				
Western Screech Owl	*Otus kennicottii*		x	
Great-horned Owl	*Bubo virginianus*		x	
Long-eared Owl	*Asio otus*	SC	x	
ORDER: APODIFORMES (Swifts and Hummingbirds)				
FAMILY: APODIDAE (Swifts)				
Vaux's Swift	*Chaetura vauxi*		x	
FAMILY: TROCHILIDAE (Hummingbirds)				
Black-chinned Hummingbird	*Archilochus alexandri*		x	
Allen's Hummingbird	*Selasphorus sasin*		x	
Anna's Hummingbird	*Calypte anna*			x
Rufous Hummingbird	*Selasphorus rufus*		x	
ORDER: CORACIIFORMES (Kingfishers and Relatives)				
FAMILY: ALCEDINIDAE (Kingfishers)				
Belted Kingfisher	*Ceryle alcyon*			x
ORDER: PICIFORMES (Woodpeckers and Relatives)				
FAMILY: PICIDAE (Woodpeckers and Wrynecks)				
Acorn Woodpecker	*Melanerpes formicivorous*			x
Red-breasted Sapsucker	*Sphyrapicus ruber*		x	
Nuttall's Woodpecker	*Picoides nuttallii*			x
Downy Woodpecker	*Picoides pubescens*			x
Northern Flicker	*Colaptes auratus*			x
ORDER: PASSERIFORMES (Perching Birds)				
FAMILY: TYRANNIDAE (Tyrant Flycatchers)				
Western Wood-Pewee	*Contopus sordidulus*		x	
Willow Flycatcher	*Empidonax traillii*	SCE,FSS	x	
Pacific-slope Flycatcher	*Empidonax difficilis*		x	
Black Phoebe	*Sayornis nigricans*			x
Say's Phoebe	*Sayornis saya*		x	
Ash-throated Flycatcher	*Myiarchus cinerascens*		x	
FAMILY: HIRUNDINIDAE (Swallows)				
Tree Swallow	*Tachycineta bicolor*		x	
Violet-green Swallow	*Tachycineta thalassina*		x	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*		x	

Common Name	Scientific Name	Status	Predicted	Occurred
Cliff Swallow	*Hirundo pyrrhonota*		x	
Barn Swallow	*Hirundo rustica*		x	
FAMILY: CORVIDAE (Jays, Magpies, and Crows)				
Scrub Jay	*Aphelocoma coerulescens*			x
American Crow	*Corvus brachyrhynchos*			x
Common Raven	*Corvus corax*		x	
FAMILY: PARIDAE (Titmice)				
Chestnut-backed Chickadee	*Parus rufescens*			x
Plain Titmouse	*Parus inornatus*			x
FAMILY: AEGITHALIDAE (Bushtit)				
Bushtit	*Psaltriparus minimus*			x
FAMILY: SITTIDAE (Nuthatches)				
White-breasted Nuthatch	*Sitta carolinensis*			x
FAMILY: CERTHIIDAE (Creepers)				
Brown Creeper	*Certhia americana*			x
FAMILY: TROGLODYTIDAE (Wrens)				
Bewick's Wren	*Thryomanes bewickii*			x
Winter Wren	*Troglogytes troglogytes*		x	
House Wren	*Troglodytes aedon*			x
FAMILY: MUSCICAPIDAE (Old World Warblers, Gnatcatchers, Kinglets, Thrushes, Bluebirds, and Wrentit)				
Golden-crowned Kinglet	*Regulus satrapa*		x	
Ruby-crowned Kinglet	*Regulus calendula*			x
Swainson's Thrush	*Catharus ustulatus*		x	
Hermit Thrush	*Catharus guttatus*			x
American Robin	*Turdus migratorius*			x
Varied Thrush	*Ixoreus naevius*			x
Wrentit	*Chamaea fasciata*			x
FAMILY: MIMIDAE (Mockingbirds and Thrashers)				
Northern Mockingbird	*Mimus polyglottos*			x
California Thrasher	*Toxostoma redivivum*		x	
FAMILY: MOTACILLIDAE (Wagtails and Pipits)				
American Pipit	*Anthus rubescens*		x	
FAMILY: BOMBYCILLIDAE (Waxwings)				
Cedar Waxwing	*Bombycilla cedrorum*			x
FAMILY: PTILOGONATIDAE (Silky Flycatchers)				
FAMILY: LANIIDAE (Shrikes)				
Loggerhead Shrike	*Lanius ludovicianus*			x
FAMILY: STURNIDAE (Starlings)				
European Starling	*Sturnus vulgaris*			x
FAMILY: VIREONIDAE (Typical Vireos)				
Solitary Vireo	*Vireo solitarius*		x	
Hutton's Vireo	*Vireo huttoni*			x
Warbling Vireo	*Vireo gilvus*		x	
FAMILY: EMBERIZIDAE (Wood Warblers, Sparrows, Blackbirds, and Relatives)				
Orange-crowned Warbler	*Vermivora celata*			x
Nashville Warbler	*Vermivora ruficapilla*		x	
Yellow Warbler	*Dendroica petechia brewsteri*	S	x	
Yellow-rumped Warbler	*Dendroica coronata*			x
Black-throated Gray Warbler	*Dendroica nigrescens*		x	
Townsend's Warbler	*Dendroica townsendi*			x
Hermit Warbler	*Dendroica occidentalis*		x	
Common Yellowthroat	*Geothlypis trichas*		x	
Wilson's Warbler	*Wilsonia pusilla*		x	
Yellow-breasted Chat	*Icteria virens*	S	x	
Western Tanager	*Piranga ludoviciana*		x	
Black-headed Grosbeak	*Pheucticus melanocephalus*		x	
Lazuli Bunting	*Passerina amoena*		x	

Common Name	Scientific Name	Status	Predicted	Occurred
Rufous-sided Towhee	*Pipilo erythropthalmus*			x
California-"Brown" Towhee	*Pipilo crissalis*			x
Chipping Sparrow	*Spizella passerina*		x	
Fox Sparrow	*Passerella iliaca*			x
Song Sparrow	*Melospiza melodia*			x
Lincoln's Sparrow	*Melospiza lincolnii*			x
Golden-crowned Sparrow	*Zonotrichia atricapilla*			x
White-crowned Sparrow	*Zonotrichia leucophrys*			x
Dark-eyed Junco	*Junco hyemalis*			x
Red-winged Blackbird	*Agelaius phoeniceus*			x
Western Meadowlark	*Sturnella neglecta*			x
Brewer's Blackbird	*Euphagus cyanocephalus*			x
Brown-headed Cowbird	*Molothrus ater*		x	
Hooded Oriole	*Icterus cucullatus*		x	
Northern Oriole	*Icterus galbula*		x	
FAMILY: FRINGILLIDAE (Finches)				
House Finch	*Carpodacus mexicanus*			x
Pine Siskin	*Carduelis pinus*			x
Lesser Goldfinch	*Carduelis psaltria*			x
American Goldfinch	*Carduelis tristis*			x
FAMILY: PASSERIDAE (Weaver Finches)				
House Sparrow	*Passer domesticus*			x
CLASS: MAMMALIA				
ORDER: MARSUPIALIA (Opossums, Kangaroos, and Relatives)				
FAMILY: DIDELPHIDAE (Opossums)				
Virginia Opossum	*Didelphis virginiana*		x	
ORDER: INSECTIVORA (Shrews and Moles)				
FAMILY: SORICIDAE (Shrews)				
Ornate Shrew	*Sorex ornatus*		x	
FAMILY: TALPIDAE (Moles)				
Broad-footed Mole	*Scapanus latimanus*		x	
ORDER: CHIROPTERA (Bats)				
FAMILY: VESPERTILIONIDAE (Vespertilionid Bats)				
Little Brown Myotis	*Myotis lucifugus*		x	
Long-eared Myotis	*Myotis evotis*		x	
Fringed Myotis	*Myotis thysanodes*		x	
Long-legged Myotis	*Myotis volans*		x	
California Myotis	*Myotis californicus*		x	
Small-footed Myotis	*Myotis leibii*		x	
Western Pipistrelle	*Pipistrellus hesperus*		x	
Big Brown Bat	*Eptesicus fuscus*		x	
Red Bat	*Lasiurus borealis*		x	
Hoary Bat	*Lasiurus cinereus*		x	
Townsend's Big-eared Bat	*Plecotus townsendii*	S,FC2	x	
Pallid Bat	*Antrozous pallidus*	C	x	
FAMILY: MOLOSSIDAE (Free-tailed Bat)				
Brazilian Free-tailed Bat	*Tadarida brasiliensis*		x	
ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)				
FAMILY: LEPORIDAE (Rabbits and Hares)				
Brush Rabbit	*Sylvilagus bachmani*		x	
Black-tailed Hare	*Lepus californicus*		x	
ORDER: RODENTIA (Squirrels, Rats, Mice, and Relatives)				
FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)				
California Ground Squirrel	*Spermophilus beecheyi*			x
Gray Squirrel	*Sciurus carolinensis*			x
Western Gray Squirrel	*Sciurus griseus*		x	

Common Name	Scientific Name	Status	Predicted	Occurred
Fox Squirrel	*Sciurus niger*		x	
FAMILY: GEOMYIDAE (Pocket Gophers)				
Botta's Pocket Gopher	*Thomomys bottae*		x	
FAMILY: HETEROMYIDAE (Pocket Mice and Kangaroo Rats)				
California Pocket Mouse	*Perognathus californicus*		x	
FAMILY: CRICETIDAE (Deer Mice, Voles, and Relatives)				
Western Harvest Mouse	*Reithrodontomys megalotis*		x	
California Mouse	*Peromyscus californicus ere*		x	
Deer Mouse	*Peromyscus maniculatus*		x	
Dusky-footed Woodrat	*Neotoma fuscipes*		x	
California Vole	*Microtus californicus*		x	
FAMILY: MURIDAE (Old World Rats and Mice)				
Black Rat	*Rattus rattus*		x	
Norway Rat	*Rattus norvegicus*		x	
House Mouse	*Mus musculus*		x	
ORDER: CARNIVORA (Carnivores)				
FAMILY: CANIDAE (Foxes, Wolves, and Relatives)				
Coyote	*Canis latrans*		x	
Red Fox	*Vulpes vulpes*		x	
Gray Fox	*Urocyon cinereoargenteus*		x	
FAMILY: PROCYONIDAE (Raccoons and Relatives)				
Ringtail	*Bassariscus astutus*	SP	x	
Raccoon	*Procyon lotor*		x	
FAMILY: MUSTELIDAE (Weasels, Badgers, and Relatives)				
Long-tailed Weasel	*Mustela frenata*		x	
Western Spotted Skunk	*Spilogale gracilis [=putorius]*		x	
Striped Skunk	*Mephitis mephitis*		x	
FAMILY: FELIDAE (Cats)				
Bobcat	*Lynx rufus*		x	
ORDER: ARTIODACTYLA				
FAMILY: CERVIDAE (Deer, Elk, and Relatives)				
Black-tailed Deer	*Odocoileus hemionus columbianus*		x	

Tree Stem Impacts

W. Edith Avenue

Scientific name	Common Name	N	1-11"d.b.h.	12-17"d.b.h	>17"d.b.h.	Total
Aesculus californicus	California buckeye	X	21	0	0	21
Juglans californica var. hindsii	black walnut	X	3	0	0	3
Populus fremontii	Fremont cottonwood	X	3	0	1	4
Prunus ilicifolia	holly-leaf cherry	X	2	0	0	2
Quercus agrifolia	coast live oak	X	6	0	0	6
Sambucus mexicana	blue elderberry	X	16	0	0	16
Umbellularia californica	California bay	X	6	0	0	6
Acacia sp.	acacia		25	0	0	25
Eucalyptus globulus	blue gum		17	5	14	36
Ligustrum sp.	privet		1	0	0	1
Pinus sp.	pine		0	0	1	1
Schinus molle	Peruvian peppertree		1	0	0	1
Sequoia sempervirens	coast redwood		9	0	0	9
-----	unknown ornamental		16	0	0	16
Total			126	5	16	147

Foothill College

Cornus sp.	dogwood	X	4	0	0	4
Juglans californica var. hindsii	black walnut	X	6	0	0	6
Quercus agrifolia	coast live oak	X	89	6	0	95
Quercus lobata	valley oak	X	4	0	0	4
Salix laevigata	red willow	X	9	2	1	12
Salix lasiolepis	arroyo willow	X	15	1	0	16
Eucalyptus globulus	blue gum		0	0	1	1
Prunus sp.	-----		16	0	0	16
Quercus douglasi	blue oak		2	0	0	2
Salix babylonica	weeping willow		0	0	1	1
Total			145	9	3	157

N= Native

d.b.h.=diameter-at-breast height

Culvert Sites

El Camino Real

Scientific name	Common Name	N	1-11"d.b.h.	12-17"d.b.h.	>17"d.b.h.	Total
Aesculus californicus	California buckeye	X	4	0	0	4
Ailanthus altissima	tree of heaven		8	0	0	8
Quercus agrifolia	coast live oak	X	1	0	0	1
Sambucus mexicana	blue elderberry	X	28	0	0	28
Prunus sp.	cherry		0	0	0	0
	Robinia pseudoacacia		0	1	0	1
-----.	unknown ornamental		1	0	0	1
Subtotal			~~33~~42	~~0~~1	0	~~33~~43

Yerba Buena Ave.

Quercus agrifolia	coast live oak	X	1	0	0	1
Quercus lobata	valley oak	X	1	0	0	1
Subtotal			2	0	0	2

Foothill Expressway

Sambucus mexicana	blue elderberry	X	9	0	0	9
Aesculus californicus	California buckeye	X	4	0	0	4
Quercus agrifolia	coast live oak	X	0	3	0	3
Salix sp.	willow	X	12	0	0	12
Subtotal			25	3	0	28

Burke Rd.

Cornus sp.	dogwood	X	2	0	0	2
Umbellularia californica	California bay	X	0	1	0	1
Eucalyptus globulus	blue gum		5	0	0	5
Prunus sp.	-----		3	0	0	3
Ulnus sp.	elm		19	0	0	19
Subtotal			29	1	0	30

O'Keefe Lane

Juglans californica var hindsii	black walnut	X	3	0	1	4
Ulnas sp.	sp.		5	1		6
Subtotal			8	1	1	10

Tepa Way

Quercus agrifolia	coast live oak	X	3	0	0	3
Quercus lobata	valley oak	X	1	0	0	1
Salix lasiolepis	arroyo willow	X	1	0	0	1
Subtotal			5	0	0	5

Total			~~102~~111	~~5~~6	1	118~~108~~

Erosion Control Sites

Site 6	*Quercus agrifolia*	coast live oak	X	0	0	1	1
Site 7	*Aesculus californicus*	California buckeye	X	2	0	0	2
Site 11	*Quercus agrifolia*	coast live oak	X	0	0	1	1
Site 20	*Juglans californica var hindsii*	black walnut	X	0	1	0	1
	Total			2	1	2	5

Total Number of Trees

W. Edith Ave.		126	5	16	147
Foothill College		145	9	3	157
Culvert Sites		~~102~~111	~~5~~6	1	~~108~~118
Erosion Control Sites		2	1	2	5
Total		~~375~~384	~~20~~21	22	~~417~~427

Total Number of Native Trees

W. Edith Ave.		57	0	1	58
Foothill College		127	9	1	137
Culvert Sites					0
El Camino Real		~~32~~33	0	0	33~~32~~
Yerba Buena Ave.		2	0	0	2
Foothill Expressway		25	3	0	28
Burke Rd.		2	1	0	3
O'Keefe Lane		3	0	1	4
Tepa Way		5	0	0	5
Erosion Control Sites		2	1	2	5
Total		~~255~~256	14	5	275~~274~~

Total Number of Non-Native Trees

W. Edith Ave.		69	5	15	89
Foothill College		18	0	2	20
Culvert Sites					0
El Camino Real		~~1~~2	1~~0~~	0	10~~1~~
Yerba Buena Ave.		0	0	0	0
Foothill Expressway		0	0	0	0
Burke Rd.		27	0	0	27
O'Keefe Lane		5	1	0	6
Tepa Way		0	0	0	0
Erosion Control Sites		0	0	0	0
Total		~~120~~129	7~~6~~	17	152~~143~~

APPENDIX D

IDENTIFICATION OF WATERS OF THE UNITED STATES

Prepared By

H.T. HARVEY AND ASSOCIATES

UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA
IDENTIFICATION OF WATERS
OF THE UNITED STATES

Prepared by

H. T. HARVEY AND ASSOCIATES

Ronald R. Duke, M.A., President
Dan Stephens, Project Manager
David J. Hartesveldt, Botany Division Head
Patrick J. Boursier, Ph.D., Plant Ecologist
Gale Rankin, M.A., Plant Ecologist

Prepared for

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118-3686

21 December 1993

Project No. 774-01

TABLE OF CONTENTS

TABLE OF CONTENTS i

EXECUTIVE SUMMARY 1

INTRODUCTION 2

SURVEY METHODS 7

SURVEY RESULTS 11

LITERATURE CITED 17

APPENDICES 19

EXECUTIVE SUMMARY

H. T. Harvey and Associates conducted field surveys along Reaches 1 through 16 (the study area) of upper Adobe Creek, for "Waters of the U.S." (hereafter referred to as "jurisdictional waters"), including areas meeting the technical criteria of jurisdictional wetlands. The objective of the survey was to delineate areas meeting the regulatory definition of jurisdictional waters, using USACE methods, and to have the delineation verified by USACE staff.

The ordinary high water (OHW) mark along the banks of Adobe Creek were determined using a combination of field characteristics and modeled data for the OHW (2.3-yr. flood event). The estimated elevation of the OHW mark, obtained by hydrologic modeling of the watershed of Adobe Creek, was used to delineate the OHW mark onto aerial-topographic maps of the study area. The elevation of the OHW mark within the study area was subsequently field-checked using physical characteristics, where possible. The location of the OHW mark obtained from hydrologic modeling was altered wherever clear field indicators of the OHW mark were observed. Surveys were also conducted for adjacent wetlands which may occur above the OHW mark and for wetlands which occur below the OHW mark. Anecdotal information regarding the Creek water levels during the last several years (to several decades) was gathered from personal interviews with individuals that work or live directly adjacent to Adobe Creek. This information helped to verify our findings.

Jurisdictional waters subject to provisions of Section 404 of the Clean Water Act were identified within the study area. These included wetlands situated below the OHW marks of the banks of Adobe Creek and tributary waters defined by the OHW marks on opposing Creek banks. Areas meeting the technical definition of wetlands were not observed above the OHW marks within the study area. The remainder of the study site, as defined by the project boundaries, did not meet the regulatory definitions of a jurisdictional water, under Section 404 of the Clean Water Act. The elevation of the ordinary high water (OHW) mark, obtained from hydrologic modeling, was generally in agreement with our estimate of the location of the mark based upon field characteristics such as scour marks, rack lines, sediment deposition and exposed roots. Along several stretches of the Creek, however, the location of the OHW marks obtained from field characteristics was substantially lower than that obtained from hydrologic modeling. This seasonal creek is not subject to the ebb and flow of the tide and should not be considered "navigable". Therefore, it does not appear to be regulated under provisions of Section 10 of the Rivers and Harbors Act.

INTRODUCTION

PROJECT AREA DESCRIPTION

The upper Adobe Creek study area is located within the city limits of Palo Alto, Los Altos and Los Altos Hills, Santa Clara County, California (Fig. 1). Portions of Adobe Creek addressed in this report (Reaches 1 through 16) extend from El Camino Real to Moody Road adjacent to Elephant Mountain (Fig. 2A and Sheet 2B). The study area is approximately 7.5 miles long. It occurs on the U.S. Geological Survey Quadrangle Maps Mountain View (Township 6, south; Range 2, west), Palo Alto (Township 6, south; Range 2, west), Cupertino (Township 6, south; Range 2, west) and Mindego Hill (Township 6, south and 7, south; Range 2, west and 3 west).

Adobe Creek flows from its headwaters along Monte Bello Ridge in the Santa Cruz Mountains to San Francisco Bay through Charleston Slough. The average annual rainfall for the vicinity of the project site is between 16 inches and 20 inches per year. However, the Santa Clara Valley, in general, received approximately 150% of normal rainfall during the winter of 1992-93; it was during this season that the present studies were conducted on site. The majority of this rainfall occurred between the months of October and April.

Daily high summer temperatures are usually between 80-degrees Fahrenheit (F) and 95-degrees F with several days in excess of 100-degrees F. Minimum winter temperatures may occasionally drop to 20-degrees F (Soil Conservation Service "SCS" 1968). Site elevations range from approximately 50 ft., national geodetic vertical datum (NGVD), along the Creek banks near El Camino Real, to approximately 540 ft. NGVD along the upper reaches of the Creek near Moody Rd.

The study area occurs on several different soil types. These soil phases include Azule silty clay loam, 9 to 15% slopes, eroded; Gilroy clay loam, 15 to 30% slopes, eroded; Garretson gravelly loam, 0 to 5% slopes; Pleasanton loam, 0 to 2% slopes; Pleasanton gravelly loam, 0 to 2% slopes; Pleasanton gravelly loam, 2 to 9% slopes; and, Zamora loam, 0 to 2% slopes (SCS 1968). None of these soils are classified as hydric (SCS 1992).

PROJECT DESCRIPTION

The Santa Clara Valley Water District proposes to implement elements of a flood control plan within the bed, bank and channel of Reaches 1 through 16 of Adobe Creek. These improvements are associated with flood control upgrade alternatives for Reaches 1 through 16. This work includes improvements and replacement of culverts, replacement of a bridge, improvements to gabion linings and by-pass entrances and maintenance to access easements.

REGULATIONS OVERVIEW/ DEFINITIONS

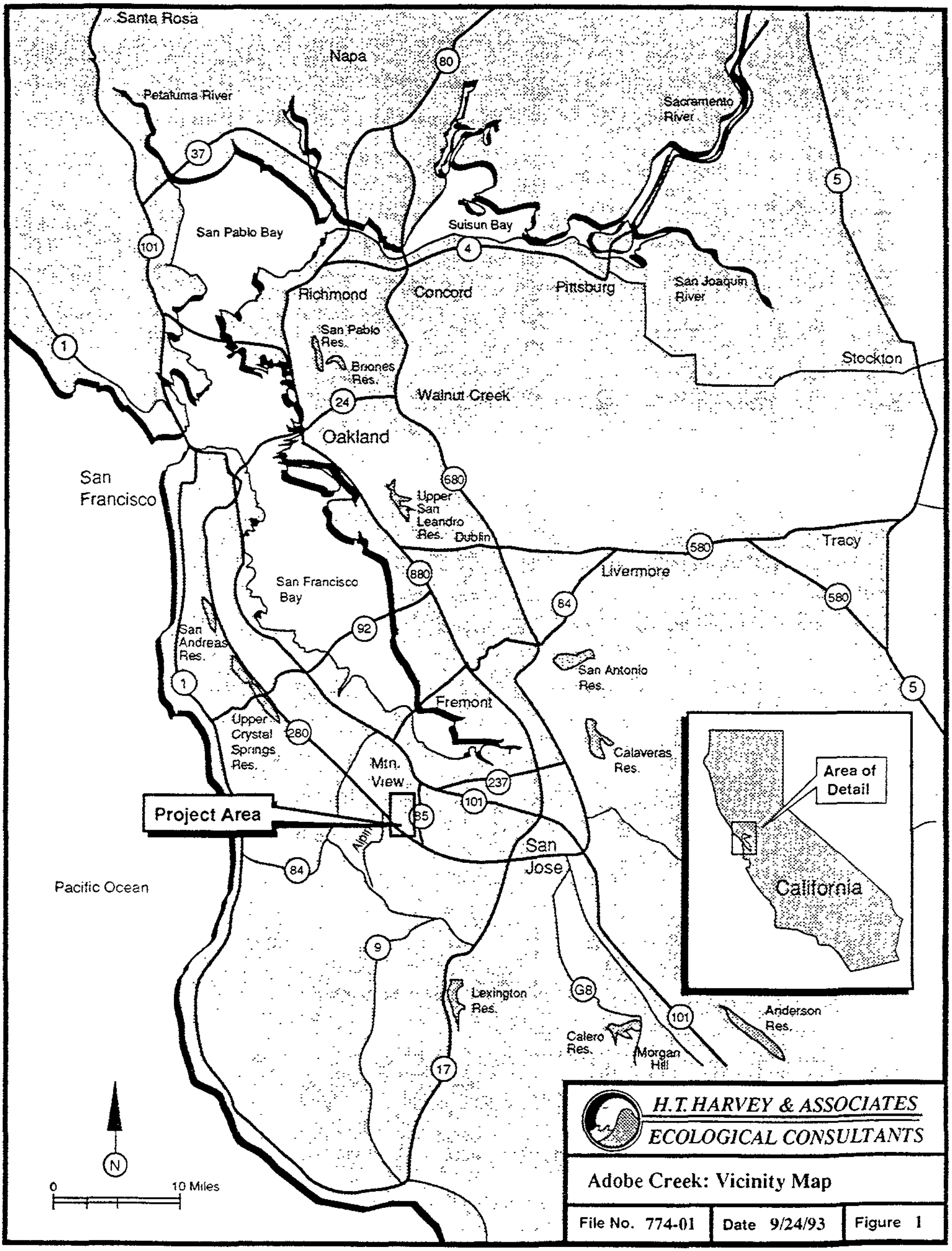
Field surveys were conducted along upper Adobe Creek for areas which meet the regulatory definition of jurisdictional waters. Such areas are subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE). The USACE under provisions of Section 404 of the Clean Water Act (1972), has jurisdiction over "Waters of the United States" (jurisdictional waters). These jurisdictional waters may include all Waters used, or potentially used, for interstate commerce, including all Waters subject to the ebb and flow of the tide, all interstate Waters, all other Waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of Waters otherwise defined as "Waters of the U. S.", tributaries of Waters otherwise defined as "Waters of the U. S.", the territorial seas, and wetlands adjacent to "Waters of the U.S." (33 CFR, Part 328, Section 328.3).

Areas not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially-irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water-filled depressions (33 CFR, Part 328).

Activities within the channel of Adobe Creek may be regulated by the U.S. Army Corps of Engineers (USACE) and California Department of Fish and Game (CDFG). The placement of fill into "Waters of the United States" (jurisdictional waters), such as Adobe Creek, must be in compliance with permit requirements of the USACE, under the Clean Water Act (1972). Similarly, activities which result in the diversion or obstruction of the natural flow of a stream, or which substantially change its bed, bank or channel, or which utilize any materials, including vegetation, from the streambed require that the project applicant enter into a Streambed Alteration Agreement with the CDFG, under Sections 1601-1603 of the Fish and Game Code of California (1992).

PURPOSE

H. T. Harvey and Associates surveyed the project site for areas which meet the regulatory definition of Waters of the United States (jurisdictional waters). Development in areas identified as Waters is subject to the permit requirements of the U.S. Army Corps of Engineers (USACE), under Section 10 of the Rivers and Harbors Act (1899) and Section 404 of the Clean Water Act (1972). The purpose of our studies was to identify jurisdictional waters, including wetlands, delineate their boundaries and prepare this technical report of findings.

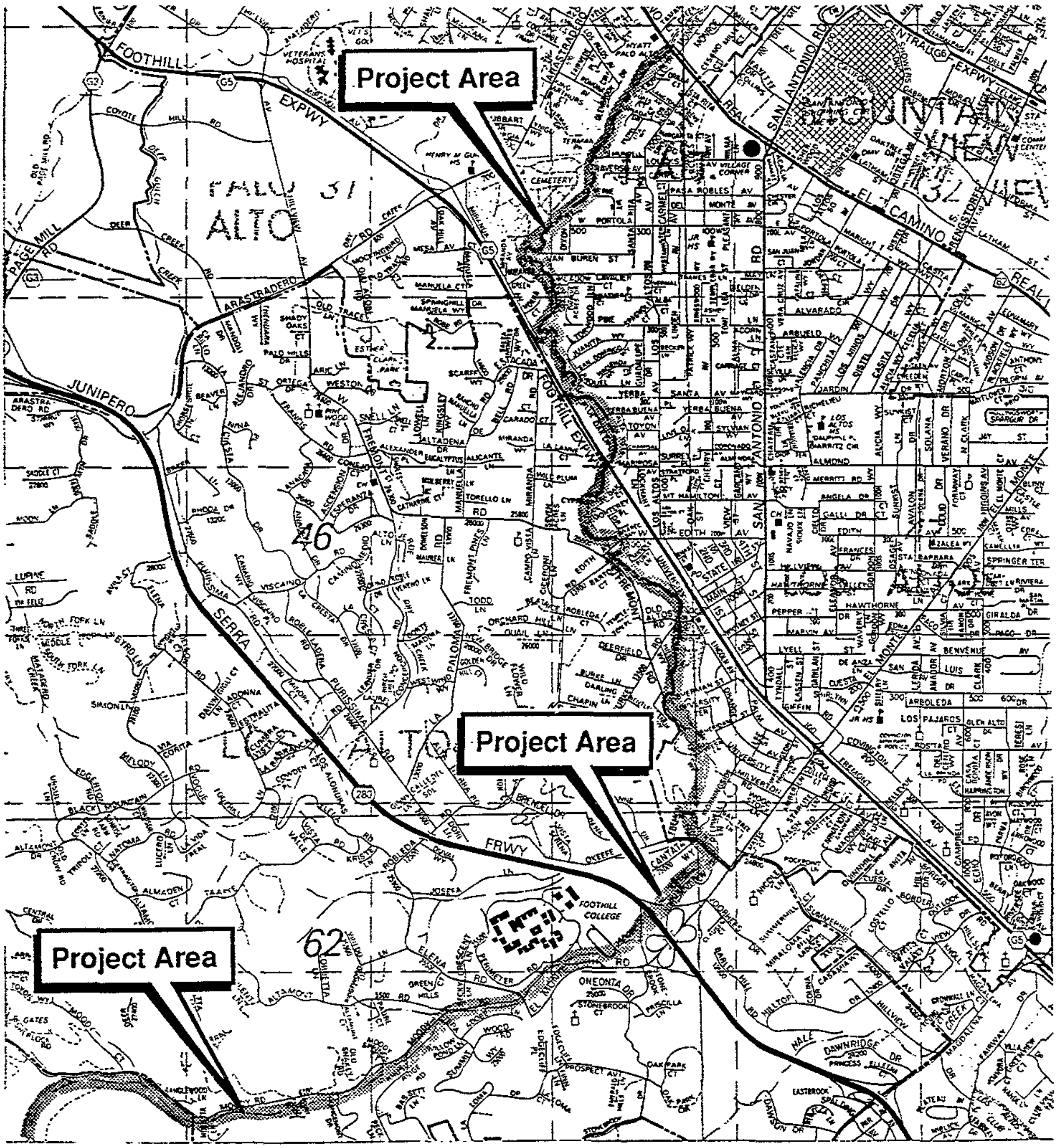


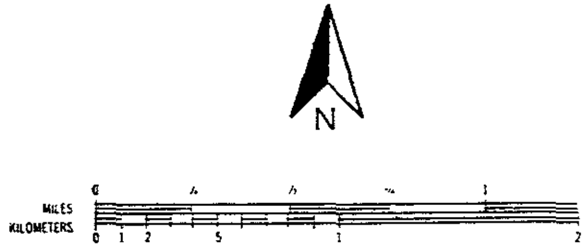
H.T. HARVEY & ASSOCIATES

ECOLOGICAL CONSULTANTS

Adobe Creek: Vicinity Map

File No. 774-01 | Date 9/24/93 | Figure 1





H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Adobe Creek: Site Map

File No. 774-01	Date 9/24/93	Figure 2A

SURVEY METHODS

GENERAL APPROACH

Reaches 1 through 16 of Adobe Creek were examined for jurisdictional waters in July, August and September 1993. Jurisdictional waters potentially occurring within the study area included wetlands (special aquatic sites) meeting certain criteria and "tributary waters". The studies described in this report were conducted to identify tributary waters which extend to the ordinary high water mark (OHW), to survey for adjacent wetlands which occur above the OHW mark (outside of delineated tributary waters) and to identify wetlands which occur below the OHW marks (within delineated tributary waters).

Sample transects were placed approximately every 200 ft., wherever possible, along the entire length of the study area (approx. 7.5 miles). The transects were situated perpendicular to the Creek channel. Two sample points were established at each transect. One sample point was located above the ordinary high water (OHW) mark (designated as sample point "B"). A separate sample point was established below the OHW mark (designated as sample point "A").

Additional sample points were located within areas meeting the technical criteria of jurisdictional wetlands (designated as sample point "W"). Information obtained at each of these sample points in regards to vegetation, soils and hydrology was compiled onto individual data sheets. This level of survey effort was deemed necessary in order to accurately document the location of areas meeting the regulatory definition of jurisdictional Waters within the study area. The intervals between the transects were also visually surveyed for areas meeting the technical criteria of jurisdictional wetlands. Pertinent data for such areas were gathered and used to delineate their boundaries. Expanded descriptions of survey methodologies are described below.

IDENTIFICATION OF TRIBUTARY WATERS

Tributary waters are under the regulatory jurisdiction of the USACE. In the absence of adjacent wetlands, this jurisdiction extends to the ordinary high water (OHW) mark on opposing channel banks. The OHW mark is typically indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in character of soil, destruction of vegetation, exposed roots on the bank or presence of litter and debris.

The estimated elevation of the OHW mark (= 2.3-yr. flood event) was provided by the Santa Clara Valley Water District (SCVWD; Mr. Peter Sheydayi and Mr. Scott Wilson). These data were obtained by hydrologic modeling of the watershed of Adobe Creek. Elevational cross-sections of the Creek were determined during field surveys conducted by the SCVWD in 1989. This information was subsequently combined to delineate the OHW mark onto aerial-topographic maps of the study area. The elevation of the OHW mark, within the study area, was subsequently field-checked using physical characteristics, where possible. The location of the OHW mark obtained from hydrologic modeling was altered wherever clear field indicators of the OHW mark were observed.

Anecdotal information regarding the Creek water levels during the last several years (to several decades) was gathered during personal interviews conducted with individuals that work or live directly adjacent to Adobe Creek. This information was used to verify our findings.

Ordinary high water marks observed in the field were drawn directly onto blue-line aerial photographs which were superimposed with topographic lines. Maps for the study area were based upon aerial photographs taken in June 1988 and reproduced at a scale of 1":50'.

IDENTIFICATION OF JURISDICTIONAL WETLANDS (SPECIAL AQUATIC SITES)

Surveys were conducted within the project boundaries for areas which meet the technical criteria of jurisdictional wetlands. Survey efforts for wetlands were concentrated in areas situated below the OHW mark of the banks of Adobe Creek and above the OHW mark in areas directly adjacent to the Creek. The vegetation, soils, and hydrology of the site were examined following the guidelines outlined in the "Routine Determination Method" in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

The study area was examined for topographic features, drainages, and areas of significant recent disturbance by walking the entire project site. A determination was then made as to whether normal environmental conditions were present at the time of the field surveys. Data were used to document which portions of the site were wetlands.

Vegetation. Plants observed at each of the sample sites were identified to species using standard floras appropriate for central California, wherever necessary. Such floras included *A California Flora and Supplement* (Munz and Keck 1973), *A Flora of the Marshes of California* (Mason 1969), *Manual of the Grasses of the United States* (Hitchcock 1971), and *Weeds of California* (Robbins, et al. 1970). The wetland indicator status of each species was obtained from the 1987 Wetland Plant List, California (Reed 1988). The names of plants were generally not taken from *The Jepson Manual* (Hickman 1993) as these names are not totally consistent with scientific names used in the *1988 Wetland Plant List, California* (Reed 1988) and the *National List of Scientific Plant Names* (Smithsonian Inst. 1982). A list of species for each observation area was then compiled and an assessment of the dominant species made (Appendix C). It was then determined which of the observation areas supported wetland vegetation.

Wetland indicator species are so designated according to their frequency of occurrence in wetlands. For instance, a species with a presumed frequency of occurrence of 67% to 99% in wetlands is designated a facultative wetland indicator species. The wetland indicator groups and the frequency of occurrence of species within them in wetlands are as follows:

INDICATOR CATEGORY	INDICATOR SYMBOL	DEFINITION
OBLIGATE	OBL	greater than 99%
FACULTATIVE WETLAND	FACW	67% - 99%
FACULTATIVE	FAC	34% - 66%
FACULTATIVE UPLAND	FACU	1% - 33%
UPLAND	UPL	less than 1%

Obligate and facultative wetland indicator species are hydrophytes that occur "in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987). Facultative indicator species may be considered wetland indicator species when found growing in hydric soils that experience periodic saturation. A complete list of the vascular plants of the project site, and their current indicator status has been provided in Appendix A.

Soils. Where possible, the top 22 inches of the soil profile was examined for hydric characteristics. Such characteristics include the presence of organic soils (Histisols), histic epipedons, aquic or peraquic moisture regime, presence of soil on hydric soil list, mottling indicated by the presence of gleyed or bright spots of colors (in the former case, blue grays; in the latter case, orange red, or red brown) within the soil horizons observed. Mottling of soils usually indicates poor aeration and lack of good drainage. Munsell Soil Notations (Munsell Soil Color Charts, Kollmorgen Instr. Corp. 1990) were recorded for the soil matrix for each soil sample. The last digit of the Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers beginning with 0 for neutral grays and increasing at equal intervals to a maximum of about 20. Chroma values of the soil matrix which are one (1) or less, or of two (2) or less when mottling is present, are typical of soils which have developed under anaerobic conditions. All soil colors indicated in this report were taken under clear, sunny skies using moistened soil samples.

In sandy soils, such as alluvial deposits in the bottom of drainage channels, hydric soil indicators include high organic matter content in the surface horizon and streaking of subsurface horizons by organic matter.

The soil survey, *Soil Survey of Santa Clara County, California* (Soil Conservation Service 1968) was consulted in order to determine which soil types have been mapped on the project site. Descriptions of soil mapping units and the list of hydric soils in Santa Clara County are included in Appendix B.

Hydrology. Each of the sample sites was examined for positive field indicators of wetland hydrology. Such indicators might include visual observation of inundation and/or soil saturation, water marks, drift lines, water-borne sediment deposits, water-stained leaves, and drainage patterns.

SURVEY RESULTS

GENERAL OBSERVATIONS

Jurisdictional waters subject to provisions of Section 404 of the Clean Water Act were identified within the study area. These included wetlands situated below the OHW marks of the banks of Adobe Creek and tributary waters defined by the OHW marks on opposing Creek banks. Areas meeting the technical definition of wetlands were not observed above the OHW marks within the study area. The remainder of the study site, as defined by the project boundaries, did not meet the regulatory definition of a jurisdictional water, whether under Section 404 of the Clean Water Act, or Section 10 of the Rivers and Harbors Act.

Biotic habitats observed within the channel and along the banks of Adobe Creek included a mixture of coast live oak/California bay riparian forest, ruderal (disturbed) and freshwater emergent/aquatic vegetation. Representative dominant plant species within each plant community included coast live oak (*Quercus agrifolia*), California bay (*Umbellularia californica*), coast redwood (*Sequoia sempervirens*), arroyo willow (*Salix hindsiana*), red willow (*Salix laevigata*), blue gum (*Eucalyptus globulus*), Himalayan blackberry (*Rubus procerus*) and poison oak (*Toxicodendron diversilobum*).

Other plant species included English ivy (*Hedera helix*), periwinkle (*Vinca major*), California black walnut (*Juglans hindsii*), valley oak (*Quercus lobata*), blue elderberry (*Sambucus mexicana*), big leaf maple (*Acer macrophyllum*), box elder (*Acer negundo*), California buckeye (*Aesculus californicus*), California rose (*Rosa californica*), tree-of-heaven (*Ailanthus altissima*), ripgut grass (*Bromus diandrus*), wild oats (*Avena barbata*), Italian thistle (*Carduus pycnocephalus*), yellow star-thistle (*Centaurea solstitialis*), Italian ryegrass (*Lolium multiflorum*), wild radish (*Raphanus sativus*), soft chess (*Bromus mollis*), small-fruited bulrush (*Scirpus microcarpus*), broad-leaved cattails (*Typha latifolia*), watercress (*Rorripa nasturtium-aquaticum*), veronica (*Veronica catenata*), tall umbrella sedge (*Cyperus eragrostis*) and rabbitfoot grass (*Polypogon monspeliensis*). Descriptions of biotic habitats of the study area have been described in a previous report (Habitat Restoration Group 1989).

Data forms (DATA FORM: ROUTINE ON-SITE DETERMINATION METHOD, USACE) for each of the sample points are presented in Appendix C. Site-specific information in regard to vegetation, soils and hydrology were entered onto the data forms primarily to document the presence of a jurisdictional wetlands situated below the OHW mark. The

USACE data forms are generally only used to aid in the delineation of jurisdictional wetlands. All sections (vegetation, soils and hydrology) of the forms were completed where jurisdictional wetlands were encountered.

In addition, vegetation, soils and hydrology information was also completed on the data forms at a representative number of sample points located throughout the project area at each of the transects. These forms were completed to document the presence or absence of jurisdictional wetlands situated above the OHW mark.

These forms, however, are useful to collect information in non-wetland sample sites. It was for this purpose that the majority of data forms were completed within the current study area. Due to the size of the project area (7.5 miles), the relatively intense level of sampling employed and the repetitive nature of information it was not considered necessary to fill out the soils and hydrology section of all data forms in these non-wetland areas. All sections of the forms, however, were completed where jurisdictional wetlands were encountered.

AREAS MEETING THE REGULATORY DEFINITION OF JURISDICTIONAL WATERS

Identification of Tributary Waters

The elevation of the ordinary high water (OHW) mark, obtained from hydrologic modeling, generally agreed with our estimate of the location of the mark based upon field characteristics such as scour marks, rack lines, sediment deposition and exposed roots. The location of the OHW marks along the banks of Adobe Creek within the study area are presented in Sheets 3 through 31 (oversize). Sheet 2B (oversize) shows the location of each individual Sheet (3 through 31) within the project boundaries. Dense vegetation, poured-concrete and sacked-concrete banks along much of Adobe Creek obscured physical characteristics of the OHW mark in many areas.

Along several stretches of the Creek the OHW marks obtained from field characteristics were substantially lower than that obtained from hydrologic modeling (e.g. Sheets 13 and 14). As a result, the distance of the OHW mark from the center of the Creek, using data generated from modeling, was substantially reduced in many locations. In some instances, the lateral distance of the OHW mark from the center of the Creek was reduced by as much as 100 ft. to 150 ft. Anecdotal information gathered at numerous locations along the study area verified these findings (see Persons Contacted in Literature Cited section of this report).

Areas below the OHW mark were primarily devoid of rooted vegetation. In many areas, the soils were often bare, although an extremely sparse cover of herbaceous or young woody vegetation including Himalaya berry (FAC), periwinkle (UPL), English ivy (UPL) and brown dogwood (FACW) were occasionally present. In some locations, the lower banks were obscured by dense, overhanging thickets of these species which were rooted on the banks above. In areas with open canopies, a moderately dense cover of herbaceous vegetation dominated including slender wild oats (UPL), ripgut brome (UPL), black mustard (*Brasssica nigra*; UPL) and wild radish (UPL). Gravel and sand bars within the channel were generally barren or were sparsely vegetated with upland species such as smilo grass (*Oryzopsis miliacea*; UPL), wild radish (UPL) and black mustard (UPL). Hydrophytic species including tall umbrella sedge (FACW), arroyo willow (FACW) and watercress (OBL) were occasionally observed as individual plants or relatively sparse clusters along the toe of slope. Many areas were devoid of vegetation due to the presence of gabion walls and retaining walls on the banks.

Hydric soil characteristics included soil chromas of 7.5 YR 3/2. Chromas of 10 YR 3/4, 10 YR 3/2, 5 YR 4/4 and 2.5 Y 4/2 were less common. Mottling and oxidized root channels were observed at 3 of the 22 sites sampled (5 YR 5/8, 2.5 YR 4/8). Areas with mottled soils were either devoid of vegetation or dominated by upland species. Soils occurring below the OHW marks were presumed to be exposed to an aquic moisture regime.

Surface or subsurface soil moisture (within sample pits) was not apparent within the bed of the Creek channel for most of its length within the study area. However, standing water and/or slowly-moving water was observed in numerous locations in the upper reaches of the Creek. At the time of the survey most of these areas were unvegetated. All areas below the OHW marks were presumed to be inundated for more than 7 consecutive days during the growing season.

Identification of Jurisdictional Wetlands (Special Aquatic Sites)

Areas meeting the technical criteria of jurisdictional wetlands within the study area are shown on Sheets 3 through 31 (oversize). Table 1 presents the sample location number and data form number of jurisdictional wetlands located below the OHW marks of upper Adobe Creek. The size of each of the jurisdictional wetlands within the study area is not reported in this report. These areas are relatively small in size and are somewhat ephemeral in nature. Many wetlands appear to be associated directly upstream or downstream of culverts, bridge overcrossings and other structures. Hydrophytic vegetation existing in a particular area identified as a jurisdictional wetlands one year may be removed, displaced or altered in size by the scouring action of water runoff within the banks of Abode Creek during the rainy season. A particular wetland, therefore, may not appear in the same location in two consecutive years. The approximate size and location of these areas, however, may be determined from Sheets 3 through 31.

Hydrophytic vegetation included watercress (OBL), small-fruited bulrush (OBL) and arroyo willow (FACW). Watercress (OBL) was the dominant species of the majority of the wetlands and was occasionally the only species present. Pink water speedwell (*Veronica catenata*; OBL) and tall umbrella sedge (FACW) were common co-dominants. Less abundant species included rabbitfoot grass (FAC), prickly lettuce (*Lactuca serriola*; FAC), curly dock (*Rumex crispus*; FACW-), sneezeweed (*Helenium puberulum*; FACW), annual bluegrass (*Poa annua*; FACW-), Himalaya berry (FAC), arroyo willow (FACW), bristly ox tongue (*Picris echioides*, FAC) and scarlet monkey flower (*Mimulus cardinalis*; OBL). Several wetland areas, particularly in the vicinity of Foothill College, were dominated by small-fruited bulrush (OBL). Broad-leaved cattails (OBL) and small-fruited bulrushes (OBL) formed monotypic stands in many areas. Arroyo willows (FACW) in association with Himalaya berry (FAC) and brown dogwood (FACW) were occasionally observed within the Creek banks.

Hydric soil characteristics included soils of low chroma (7.5 YR 3/2) with mottling and oxidized root channels (5 YR 5/8). Soils were generally composed of alluvial sediments ranging in texture from fine sandy clay to gravel and stones. Soils occurring below the OHW marks were presumed to be exposed to an aquic moisture regime.

All areas meeting the technical definition of jurisdictional wetlands were located below the OHW marks within the Creek channel. Most wetland areas were not inundated at the time of the survey (July - September 1993). All areas below OHW marks were presumed to be inundated for more than consecutive 7 days during the growing season.

AREAS NOT MEETING THE REGULATORY DEFINITION OF JURISDICTIONAL WATERS

Areas situated above the OHW marks were dominated by a mixture of facultative and upland species including Himalaya berry (FAC), periwinkle (UPL), English ivy (UPL), poison oak (UPL), brown dogwood (FACW), California blackberry (UPL), California rose (FAC+) and snowberry (*Symphoricarpos rivularis*; FACU). Vegetation within the understory varied from relatively sparse to impenetrable. Overstory vegetation along the Creek was generally rooted on the upper portions of the banks where slope angles were gentle enough to permit growth and along the bank tops. These species included California bay (FAC), holly-leaved cherry (*Prunus ilicifolia*; UPL), arroyo willow (FACW), California buckeye (UPL) and live oak (UPL).

Hydric soil characteristics were generally absent. Soil chromas were typically 7.5 YR 3/2; mottling and oxidized root channels were not observed.

Sample sites situated above the OHW marks were generally devoid of hydrologic characteristics. Scouring, exposure of bare roots and litter deposited in shrubs and trees were occasionally observed above the OHW mark along the channel banks. Areas of high-bank scouring were often associated near channels bends, or located just downstream of riprap banks. This scouring was presumed to be caused by higher than average stream flows of the previous rainfall season.

Table 1. Sample location number and sheet number of areas meeting the technical criteria of jurisdictional wetlands below the ordinary high water mark of upper Adobe Creek.

Sample Location Number*	Sheet Number
W26A	7
W40A	9
W41A	"
W42A	"
W45A	10
W45B	"
W46A	"
W47A	"
W48A	"
W49A	10A
W49B	"
W49C	"
W49D	"
W50A	"
W50B	"
W50C	"
W50D	"
W51A	"
W52A	"
W54A	11
W59A	12
W62A	"
W62B	"
W62C	"
W63A	"
W63B	"
W63C	"
W63D	"
W64A	"
W64B	"
W64C	"
W65A	"
W65B	"
W67A	13
W67B	"

Sample Location Number	Sheet Number
W75A	14
W83A	15
W85A	"
W85B	"
W99A	17
W100A	"
W110A	21
W111A	"
W114A	"
W115A	22
W116A	"
W116B	"
W116C	"
W117A	"
W117B	"
W117C	"
W117D	"
W117E	"
W118A	"
W118B	"
W118C	"
W118D	"
W118E	"
W119A	23
W119B	"
W124A	25
W124B	"
W124C	"
W125A	"
W126A	"
W126B	"
W131A	26
W131B	"
W133A	"
W134A	27

*, denotes areas meeting the technical criteria of jurisdictional wetlands.

LITERATURE CITED

California Department of Fish and Game. 1992. Fish and Game Code of California.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army.

Habitat Restoration Group. 1989. Biological Resources of Upper Adobe Creek Study Area.

Hitchcock, A.S. 1971. Manual of the Grasses of the United States. Dover Publications.

Holland, R.F. 1986. Preliminary Description of the Terrestrial Natural Communities of California. California Department of California.

Kollmorgen Instruments Corp. 1990. Munsell Soil Color Charts. New York.

Mason, H.L. 1969. A Flora of the Marshes of California. University of California Press.

Munz, P.A. and D.E. Keck 1968. A California Flora and Supplement. University of California Press.

Rantz, S.E. 1971. Suggested Criteria for Hydrologic Design of Storm Drainage Facilities in the San Francisco Bay Region, CA. USGS. Open-File Report, Menlo Park, CA.

Reed, P.B. 1988. 1988 Wetland Plant List, California. United States Fish and Wildlife Service.

Robbins, W.W., and Margaret K. Bellue, and Walter S. Ball. 1970. Weeds of California. California State Department of Agriculture.

Smithsonian Institution. 1982. National List of Scientific Plant Names. Department of Agriculture.

Soil Conservation Service. 1968. Soils of Santa Clara County, California. USDA.

Soil Conversation Service. 1991. List of Hydric Soils for Santa Clara County, California. USDA.

PERSONS CONTACTED

Bell, Bruce. WSC Development property. Creek has only jumped its banks three times in the past 30 years.

Copock, Gerald and Mary. 25461 Fremont Rd. Have lived adjacent to Adobe Creek since 1955. In 38 years Adobe Creek has only flooded the street near their house three times.

Ledterman, Ms. Has lived next to Adobe Creek for over 30 years. Creek has overflowed its banks near her house 4 times.

McCarthy, Brian J. Public Works Supervisor, City of Los Altos. (415) 948-0482. In normal rainfall years Adobe Creek is totally confined to its banks.

Sheydayi, Peter A. Assistant civil engineer. Santa Clara Valley Water District. (408) 268-7687.

Wilson, Scott M. Associate civil engineer. Santa Clara Valley Water District. (408) 927-0710.

APPENDIX E

HAZARDOUS MATERIALS REPORT

Prepared By

TERRATECH, INC.

FINAL REPORT

PHASE I HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
SANTA CLARA COUNTY, CALIFORNIA

DISTRICT AGREEMENT NO. A1564

TERRATECH PROJECT 5499

for

SANTA CLARA VALLEY WATER DISTRICT
Environmental Compliance Division
5750 Almaden Expressway
San Jose, California 95118

by

TERRATECH, INC.
1365 Vander Way
San Jose, California 95112

January 24, 1994

TABLE OF CONTENTS

SUMMARY 1

INTRODUCTION 1
  Purpose 2
  Limitations and Exceptions to Assessment 2

SCOPE OF WORK 2

GENERAL FINDINGS 3
  Physical Setting 3
  Ground Water 4
  Alignment Description 4
  Regulatory Information 5
  Historical Use Information 10
    Aerial Photographs 10
    Topographic Maps 11
    City Business Directories 12
    Sanborn Fire Insurance Maps 13
  Site Reconnaissance Information 13
    Suspicious Features 13
    Results of Sampling and Analysis 14
    Well Information 14
  Interview Information 15

SITE SPECIFIC FINDINGS 16

  ALTA MESA MEMORIAL PARK 16
  Soil Sampling and Analysis 16
  Interview Information 17
  Regulatory List and File Review Information 18
  Summary of Findings 18

  MORNINGSIDE PRIVATE DRIVE 18

  FOOTHILL COLLEGE MAINTENANCE YARD 18
  Soil Sampling and Analysis 19
  Interview Information 19
  Regulatory List and File Review Information 21
  Summary of Findings 21

  HIDDEN VILLA 21
  Soil Sampling and Analysis 21
  Summary of Findings 23

CONCLUSIONS 23

TABLE OF CONTENTS
(con't)

TABLE 1 - Summary of Analytical Test Results

FIGURES
- 1 - Vicinity Map (USGS 1961 Topo Map)
- 2 - Site Map
- 3 - 1899 USGS Topographic Map
- 4 - 1940 USGS Topographic Map
- 5 - 1948 USGS Topographic Map
- 6 - Water Well Location - Sta. 397±
- 7 - Water Well Location - Sta. 495±
- 8 - Water Well Location - Sta. 565±
- 9 - Water Well Location - Sta. 577±
- 10 - Sampling Detail - Alta Mesa Memorial, Sta. 308-311
- 11 - Sampling Detail - Septic Leachate, Sta. 466±
- 12 - Sampling Detail - Foothill College, Sta. 507-511
- 13 - Sampling Detail - Hidden Villa, Sta. 613-615
- 14 - Sampling Detail - Hidden Villa, Sta. 625-628
- 15 - Sampling Detail - Hidden Villa, Sta. 633-636

PHOTOGRAPHS
- 1 - Well at Hau Residence
- 2 - Caltrans Well at Foothill College
- 3 - Former Paint Shop at Foothill College
- 4 - Current Hazmat Storage at Foothill College
- 5 - Creekbank Landfill at Station 626±
- 6 - Dumpster at Hidden Villa
- 7 - Drums and Debris at Hidden Villa

APPENDICES
- A - VISTA California Radius Detailed Report of Regulatory Listings
- B - Excerpts and Adaptation of Standard Procedures
- C - Analytical Laboratory Reports and Chain-of-Custody Record
- D - Completed ASTM Questionnaires for Interviews

MAP POCKET - 1932 Sanborn Fire Insurance Map

PHASE I HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
EL CAMINO REAL TO MOODY ROAD
SANTA CLARA COUNTY, CALIFORNIA

DISTRICT AGREEMENT NO. A1564
TERRATECH PROJECT 5499

SUMMARY

Terratech has performed a Phase I Hazardous Materials Assessment along the alignment of Adobe Creek from El Camino Real to Hidden Villa through the communities of Los Altos Hills, Los Altos, Palo Alto and Mountain View. The work included some spot sampling and testing in six locations of suspicious features. This assessment has revealed no clear evidence of recognized hazardous materials concerns within, or immediately adjoining, the alignment. We did however find the following environmental conditions of note:

1. septic leachate from a residential property on Morningside Drive, Station 468±;
2. creek bank landfills (domestic type refuse) around Station 613 and Station 636±; and
3. storage of unlabelled 55-gallon drums without secondary containment adjacent to the creek at the Hidden Villa waste storage area, Station 633±.

Nearby properties identified as being impacted by (or handling) hazardous materials are listed and plotted in Appendix A. Based on our knowledge of the sites and the hydrogeologic conditions in this area of Santa Clara County, together with input from environmental agency representatives familiar with the sites, our field reconnaissance and sampling results, it is our opinion that the subject property has a low likelihood of being impacted by any of the known, nearby contaminated sites.

Terratech does not believe that further hazardous material investigations are warranted for this section of Adobe Creek.

INTRODUCTION

This report summarizes the work performed and the findings and opinions of Terratech's Hazardous Materials Assessment of the Upper Adobe Creek alignment (see Figures 1 and 2). The Santa Clara Valley Water District (District) proposes a flood control project along this approximately 7.5-mile corridor which extends from El Camino Real in Mountain View to the Hidden Villa property located near the intersection of Moody Road and Moody Court in Los Altos Hills.

Purpose

The purpose of this Hazardous Materials Assessment is to identify, to the extent feasible pursuant to the processes prescribed in ASTM Practice E 1527, "recognized environmental conditions" in connection with the alignment. The District has requisitioned this work to identify the potential for hazardous materials to impact flood control work, including right-of-way property acquisitions, along the alignment.

Limitations and Exceptions to Assessment

This report and the associated work have been provided in accordance with the general principles and practices currently employed in the environmental consulting profession. This is in lieu of all warranties, express or implied.

This assessment is not a regulatory compliance audit. Our opinions and conclusions are based on information collected from historical photographs and maps; regulatory agency files and lists; interviews and current site conditions. If anyone is aware of any environmental concerns not mentioned in this report, they should immediately forward the information to us for evaluation.

SCOPE OF WORK

As detailed in the agreement dated June 29, 1993, between the district and TERRATECH, the following work was completed for this assessment:

1. Reviewed regulatory information for records of contamination along the alignment and in the surrounding area (up to 1/2-mile away). Subcontracted the records search to VISTA Environmental Information, Inc., an information retrieval company. The VISTA report is presented in Appendix A.

2. Researched site history by examining historical aerial photographs at the University of California at Santa Cruz, McHenry Library Map Room and researching available Sanborn Fire Insurance Maps. Additionally, available Polk City Directory volumes and Haines and Company, Inc. Criss Cross Directories for the project alignment were reviewed.

3. Performed a field reconnaissance of the entire creek channel searching for evidence of potential contamination such as unusually stained soils or pavements and hazardous materials drums or containers. Due to the project size and trespassing concerns, properties beyond the creek channel were not inspected, except as noted in this report.

4. Interviewed facilities operators and other persons with relevant knowledge of potentially contaminated areas.

5. Sampled soil and surface water in areas suspected of being contaminated. Testing was specified by Terratech and performed primarily by Curtis & Tomkins,Ltd., a laboratory contracted directly by the District. Standard procedures for sampling retrieval, handling and analysis are presented in Appendix B.

6. Evaluated the information collected and prepared this written report summarizing our findings, and opinions and conclusions.

GENERAL FINDINGS

General information related to the entire alignment and/or small or less significant sites along the alignment are discussed in this section. Larger, more complex sites; Alta Mesa Memorial Park, Morningside Drive, Foothill College and Hidden Villa are discussed in detail in the "Site Specific Findings" section.

Physical Setting

The site is located within Santa Clara Valley, a southeastward extension of San Francisco Bay within the California Coast Ranges. The Santa Clara Valley is bounded on the northeast by the Diablo Range and on the southwest by the Santa Cruz Mountains. The valley is underlain by unconsolidated alluvial fill washed into a structural depression from the bedrock of the mountainous areas. Adobe Creek is one of a number of drainages originating in the Santa Cruz Mountains to the southwest and draining northeastward into San Francisco Bay.

Adobe Creek originates at elevations of about 2,400 feet along Monte Bello Ridge in the Santa Cruz Mountains (see Figure 1). Smaller tributaries also enter the drainage above the project alignment from a smaller ridge, El Corte Madera, to the northwest. During the field work phase of this project (October), water was flowing intermittently along stretches of the creek, generally at depths of less than 3 feet.

The beginning of the project is located at the intersection of Adobe Creek with El Camino Real in Palo Alto (see Figure 2). From this point within the flat interior portion of the basin, the project alignment trends nearly due south with local ground elevations of about 40 to 60 feet (mean lower low water - MLLW). The stream elevation rises toward Los Altos Hills where it crosses into the hydrologic zone designated as the" Unconfined Forebay" by the SCVWD (see discussion below) where deposits from the mountains form alluvial fans bordering the baylands. Above Foothill College, the stream climbs into the bedrock area where the Santa Clara Formation comprises the near-surface subsurface materials.

Ground Water

The hydrographic units underlying the study site are generally divided into the Forebay (or"Unconfined Zone"), and the upper and lower zones of the interior valley (Santa Clara Valley Water District, 1990). The bedrock area is not considered a significant water-bearing zone. The forebay is located along the elevated edges of the valley basin, and is characterized by coarse alluvial fan deposits from streams exiting the hills.

Moving down the alluvial fans into the basin's interior, the Upper and Lower Zones were deposited as outer alluvial fan outwash, marshland, and shallow deposits of the ancestral San Francisco Bay. These two zones are characterized by numerous individual gravelly and sandy aquifers, separated by thick clayey and silty layers forming relatively impermeable and locally "leaky" boundaries. The two zones are separated overall by an extensive regional aquitard ranging in depth from 10 to 100 feet, and in thickness from 20 to over 100 feet.

Ground water in the Forebay is present predominantly under water table (unconfined) conditions with only locally confined conditions. Ground water in the Lower Zone is present under confined conditions, whereas the Upper Zone is a mix of unconfined and confined conditions.

Depths to first ground water (excluding locally or seasonally perched zones) likely range from as shallow as 20 to 30 feet near El Camino Real to over 50 feet upstream. Adobe Creek appears to be a "gaining stream" (receiving perched ground water recharge in the upper reaches, above Interstate 280, and a "losing stream" (causing ground water recharge) in the lower portions.

The basin's primary source of ground water recharge is by inflow through the forebay areas to the interior zones. Additional recharge is achieved via percolation of stream flow, excess irrigation water and precipitation, and artificial recharge ponds of the Santa Clara Valley Water District. Most of the primary production wells in the area draw water from the Lower confined zone, followed by the Forebay area.

The general hydraulic gradient in the Forebay and Upper Zone is from the recharge areas north to northeast toward the bay. The gradient in the Lower Zone is influenced by various pumping areas.

Alignment Description

As shown in Figures 1 and 2, the project extends nearly due south from the intersection of Adobe Creek with El Camino Real (Begin Project Station 248+00) to where Adobe Creek crosses Highway 280. From there it trends west along the south side of Moody Road to the end of the project at Hidden Villa at Station 652+91.

Generally south from the intersection of Adobe Creek with El Camino Real, Adobe Creek forms the boundary between residential areas of Los Altos to the east and Palo Alto to the west. Continuing south along Foothill Expressway the creek then forms the boundary between Los Altos to the east and Los Altos Hills to the west. The stream crosses under the expressway at Station 376±. Again it runs through almost exclusively residential areas along the east bank. On the west bank, the Jesuit Retreat borders the creek for about 3,000 feet beginning at Manresa Lane. The Adobe Creek alignment continues to the south until crossing under Interstate 280 at Station 501± and emerging at the Foothill College Campus athletic fields. El Monte Road and campus access roads border the creek to the east until it crosses to the south side of Moody Road at the west end of the campus. The creek then continues along Moody Road to the end of the project at Hidden Villa.

Aside from residential development, other significant features along the alignment include Terman Park and School (Jewish Community Center), Alta Mesa Memorial Park, Lincoln and Shoup Parks, the Jesuit Retreat, Foothill College and Hidden Villa. Industrial usage near the creek is limited to maintenance yards related to the cemetery and the college campus. Other development includes the commercial - light retail zones along El Camino Real at the start of the project and Main Street in Los Altos, located east of Foothill Expressway, south of Edith Avenue and west of San Antonio Road.

Regulatory Information

A VISTA California Radius Detailed Report was prepared for this site on October 8, 1993. This report is presented in Appendix A, and results of the survey are summarized below. Twenty listed sites were identified within 1/2-mile of the alignment. However based on supplemental research listings 1, 3 and 4 appear to be the same "site". [Note: Additional sites were presented in the "mentions" section of the VISTA report. These are sites for which precise address information was not obtained by VISTA, however they were noted as being in the general project vicinity. From our review of this group of additional sites none appear to be in close proximity or particular significance to the Adobe Creek alignment.]

1. Los Altos Well Field	Hillview & Eleanor	Los Altos
2. a) Shell Station	2595 California	Mountain View
b) Victor's Goodyear	298 San Antonio	Mountain View
c) Texaco/Exxon	344 San Antonio	Mountain View
3. Hillview Maint. Yard	94 Hillview Ave	Los Altos
4. Hillview - Eleanor Area Plume	Eleanor & San Antonio	Los Altos
5. Villa Angela Prop.	11 Angela Drive	Los Altos

6. Chevron Station	470 San Antonio Rd.	Los Altos
7. UNOCAL Station	330 San Antonio Rd.	Los Altos
8. ARCO Station	988 San Antonio Rd.	Los Altos
9. Chevron Station	45 Main Street	Los Altos
10. Brusie Property	67 Del Monte	Los Altos
11. Chevron Station	401 Main Street	Los Altos
12. UNOCAL Station	4350 El Camino Real	Los Altos
13. Paddlesford Olds	4230 El Camino Real	Palo Alto
14. n/a	4201 El Camino Real	Palo Alto
15. Carlsen Subaru	4190 El Camino Real	Palo Alto
16. Cymrot Property	12120 Edgecliff Place	Los Altos Hills
17. Foothill College	12345 El Monte Road	Los Altos Hills
18. Alta Mesa Memorial	695 Arastradero Road	Palo Alto
19. Fairchild	4001 Miranda Ave	Palo Alto
20. Ferrari Property	25800 Altamont Road	Los Altos Hills

The current general status of each site is denoted in the VISTA report (Appendix A). Of these sites, Numbers 1, 2b, 3, 4, 5, 9, 15 and 20 are either closed or are listed as hazardous materials storage or generator sites only and not documented spill cases. In the case of generators and handlers of hazardous materials, the Hazardous Materials Management Plan (HMMP) for each site was examined at the office of the agency with jurisdiction (Santa Clara County or Palo Alto Fire Department).

The current status of active contamination sites was researched further by Terratech at the District Fuel Leak Section (October 13, 1993), the Santa Clara County Hazardous Materials Program office (November 18, 1993) and the Palo Alto Fire Department (November 30, 1993). Details regarding Sites 17 and 18 are discussed in the "Site Specific Findings" section. Details of each other active case, including distance and direction from Adobe Creek, are discussed below.

2a. Shell Station, 2595 California, Mountain View 0.5 mile east

Soil and ground water contamination at this site are presently being remediated using both ground water and soil vapor extraction systems. Floating product was reported in several wells at the site in a Pacific Environmental Group, Inc. (PEG) report dated July 1993. PEG reports a steep cone of depression around the two existing pumping wells. At various times the natural ground water gradient in the area has been reported to be north-northeast, east and southeast. All of these directions are generally away from Adobe Creek.

2c. Texaco/Exxon Station, 334 San Antonio Road, Mountain View 0.5 mile east

Floating product has been reported in ground water at this site with TPH as gasoline and benzene concentrations noted as high as 52,000 ppb and 7,400 ppb, respectively (PEG report dated July 13, 1993). The ground water gradient direction was reported to the north at this location, generally parallel to Adobe Creek.

6. Chevron Station, 470 San Antonio Road, Los Altos 0.3 mile east

Chemical Processors, Inc., performed a soils investigation at this site in 1990, and retrieved soil samples from three 45-foot borings on the property. Ground water was not encountered in the zone explored, and no detectable concentrations of TPH as gasoline and diesel, BTEX or oil and grease were found in the soil samples from this site. Accordingly, there appears to be no risk to the Adobe Creek alignment.

7. UNOCAL Station, 330 San Antonio Road, Los Altos 0.3 mile east

An underground tank failure at this site resulted in a 4,000 gallon loss of leaded gasoline in 1984. A soil vapor extraction system has been designed and permitted, however not yet implemented to remediate the contamination. Recent ground water quality data revealed concentrations of up to 12,000 ppb TPH as gasoline and 6,600 ppb benzene in ground water beneath this site. Ground water gradients have been predominantly north/northeast and occasionally southeast at this location, generally parallel to or away from Adobe Creek.

8. ARCO Station, 988 San Antonio Road, Los Altos 0.5 mile east

Floating product was reported in ground water at this site in 1988. A ground water and soil vapor extraction system began operations in September 1991. The soil vapor extraction system operated through the spring of 1993, and a dual air sparging system is currently being installed into the vapor wells. As of July 1993, nearly 4 million gallons of ground water had been processed through the ground water treatment system. At that time, purgeable hydrocarbon levels at the influent port were at concentrations of 6,200 ppb (chromatogram pattern indicates gasoline), and no benzene was noted. PEG reports having attained good hydraulic control across the site. The natural ground water gradient is reportedly to the north, away from Adobe Creek.

10. Brusie Property, 67 Del Monte Avenue, Los Altos 0.5 mile east

In 1992 a 550-gallon heating oil tank was removed from inside the residence at this site. Soil samples from beneath the tank contained 25,000 ppm and 1,500 ppm of TPH as diesel. A work plan is being prepared to address the contamination. Heating oil is neither particularly toxic nor mobile.

11. Chevron Station, 401 Main Street, Los Altos 0.1 mile east

Chemical Processors, Inc., performed a soils investigation at this site in 1990 and retrieved soil samples from three 45-foot borings on the property. Ground water was not encountered in the zone explored, and no detectable concentrations of TPH as gasoline or BTEX were found in the soil samples. Accordingly there appears to be no risk to the alignment from this site.

12. UNOCAL Station, 4350 El Camino Real, Los Altos 0.2 mile southeast

Quarterly monitoring of gasoline-impacted ground water is being performed at this site, with the most recent report dated July 1993. The highest levels of contamination reported in the last round of sampling of the site include TPH as gasoline at 4,600 ppb, and benzene concentrations of 430 ppb. The ground water gradient at this site has reportedly ranged from east-northeast to, occasionally, southeast, generally away from Adobe Creek.

13. Paddlesford Olds, 4230 El Camino Real, Palo Alto 0.1 mile northwest

In August 1992, Palo Alto Fire Department witnessed the removal of a 6- foot diameter, 7-foot-long tank at this site. In the fire department notes,. it was stated that no holes or evidence of contamination were noted during the tank removal. There is no indication in the files that soil samples were retrieved and several undated citations were present specifying improper tank removal, handling and disposal. This site is designated a self-directed case by the SCVWD. Although not far from Adobe Creek, this appears to be a relatively minor release.

14. n/a, 4201 El Camino Real, Palo Alto 0.3 mile northwest

A Hertz Rental Car facility currently occupies this site, located at the southeast corner of El Camino Real and West Charleston Road in Palo Alto. None of the files researched contained information on this site. A drive-by inspection revealed the presence of a gasoline pump and underground storage tank at the site, and a number of monitoring well vault boxes in the paved area surrounding the facility. This property is located downgradient of the project alignment, and if ground water is impacted, it would not likely pose a risk to Adobe Creek.

16. Cymrot Property, 12120 Edgecliff Place, Los Altos Hills 0.3 mile south

Two 550-gallon UST's were filled with concrete at this residential site in 1988. Soil samples retrieved from beside the filled-in-place tanks contained 150 ppm and 58 ppm TPH, and one sample contained 2.4 ppm benzene. The latest correspondence in the file recommends the owner consider application to the "Conditional Case Closure" program with the SCVWD. Although probably upgradient, this minor case does not appear to represent a risk to the alignment.

19. Fairchild, 4001 Miranda Ave, Palo Alto 0.4 mile west

The property at 4001 Miranda Avenue, now AFFYMAX Research Institute, was formerly occupied by the Fairchild Semiconductor facility. The National Semiconductor Corporation is currently handling site clean-up work according to information presented in the files. Harding Lawson Associates is the environmental consultant involved with site work.

At present, 42 monitoring wells and 6 extraction wells are in place to monitor and remove solvent-contaminated ground water. Numerous solvents are present in the ground water at the site. TCE is found at the highest concentrations and is considered the indicator parameter in tracking and reporting contaminant trends. For discussion purposes the aquifer has been divided into 4 zones each spanning 50 feet of depth from the surface to 200 feet.

The ground water gradient at the site is predominantly to the south-southeast except for a zone in the northern end of the 50 - 100 foot aquifer which trends east-northeast. The plume extends beyond Henry Gunn High School to the southeast as shown approximately in Figure 2.

Historical Use Information

Historical documents were researched to aid in determination of historical activities along the alignment. Air photos from the Map Room at the McHenry Library on the University of California at Santa Cruz campus were researched. Sanborn Fire Insurance Maps were provided by VISTA, INC. as part of their report.

Aerial Photography

The following black and white, stereoscopic aerial photographs were reviewed for evidence of historic site usage:

DATE	AGENCY	SCALE	ROLL & FRAMES
1939	USDA	1:20,000	CIV-286 - 8, 9, 68, 69
1948	USGS	1:23,600	2 - 141, 142, 143
1950	USDA	1:20,000	CIV-18G - 26, 27, 28, 29
1963	USDA	1:20,000	CIV-1DD - 214, 215, 216, 217
1968	USGS	1:30,000	1 - 147, 148
1985	WAC CORP	1:31,680	13 - 77, 78, 90, 91, 92

Available aerial photography of the project area was examined for indications of hazardous materials conditions of possible concern to the project site. Indications include visible above ground fuel storage tanks and indications of vegetative stress, settling ponds, windmills or tank houses indicating old domestic wells, and drum storage among others.

In the 1939 and 1948 photography, much of the area surrounding Adobe Creek is in agricultural use, primarily orchards and pastures being visible. El Camino Real and a road at the present location of Foothill Expressway are major thoroughfares. Commercial development is concentrated along El Camino Real and surrounding Main Street in Los Altos. Scattered homes border Adobe Creek from El Camino Real to the end of the project on Moody Road, with the greatest concentration east of the creek in Los Altos. No evidence of above ground storage tanks, or other likely environmental threats are apparent.

The Palo Alto Hyatt Hotel site, at the southwest corner of the intersection of El Camino Real and Adobe Creek, was occupied by a small residence in the 1950 frames. Alta Mesa Memorial Park is evident but appears to be undeveloped for the most part. Much of the area west of the creek is in agricultural use in 1950, with the densest residential development visible along major streets (Altos Avenue, Mundell, Loucks, West Portola and Van Buren) to the east of Adobe Creek in the Los Altos area. Commercial development is concentrated along El Camino Real and Main Street in Los Altos. The University Terrace subdivision south of downtown Los Altos appears to be completely built out in 1950. Foothill College and Interstate 280 are absent from the landscape in 1950, and residential development along Moody Road is sparse. No obvious evidence of the above-mentioned types of environmental threats was noted in the 1950 photography.

In the 1968 and 1963 photos, the Palo Alto Hyatt Hotel, Foothill College and Alta Mesa Memorial Park are evident, but there is generally less dense development in the residential areas than at present. In the 1963 photographs, Interstate 280 has not yet been constructed, and El Camino Real and Foothill Expressway appear to be the major thoroughfares in the area. Commercial development is apparent in the area surrounding Main Street in Los Altos and along El Camino Real. Upstream of Foothill College, sparse development is visible, and remnants of small (several acre) orchards are visible.

In the 1985 photographs, features and development are virtually the same as at the present. The Adobe Creek channel is characterized by dense vegetation and trees that obscure the actual channel along most of the alignment. At the scale of the photographs, it was difficult to distinguish small features, but there is no obvious evidence of environmental threats.

Topographic Maps

Four U. S. Government topographic maps were examined to glean information regarding historic use along the Adobe Creek drainage. The following documents were reviewed at the Map Room of the McHenry Library of the University of California at Santa Cruz campus.

DATE	SCALE	SOURCE/NAME
1899	1:62,500	United States Geological Survey Palo Alto Quadrangle
1940	1:62,500	War Department Corps of Engineers Palo Alto Quadrangle
1948	1:62,500	United States Geological Survey Palo Alto Quadrangle
1961	1:62,500	United States Geological Survey Palo Alto Quadrangle

In the 1899 print (Figure 3) the Adobe Creek drainage is labelled San Antonio Creek and appears to empty into San Francisco Bay west of "Mountain View Landing". The only developments noted are scattered residences along the creek and several of the old roads. Moody Road is visible, as are El Camino Real, San Antonio Road and several of the smaller side streets. The largest settlements in the area are Mayfield (California Avenue area of Palo

Alto) and Mountain View, with very scattered residential farm houses visible to the south of Mountain View. The Southern Pacific Railroad line runs along its present alignment parallel to Alma Street and Central Expressway. No ponds, tanks or other indications of industrial developments, or oil or gas wells, are apparent.

On the 1940 map (Figure 4), the name of Adobe Creek is used and the drainage is shown terminating just north of the Southern Pacific Railroad line at Alma Street. A new spur of the railroad is visible, running south from Palo Alto and turning southeast extending along the south side of downtown Los Altos. Palo Alto, Mountain View and Los Altos town centers show concentrated development. The major thoroughfares now in use are visible, with the exception of Interstate 280. Again, no evidence of settling ponds, wells or other likely sources of environmental concern are evident along the project alignment.

Alta Mesa Memorial Park is noted in the 1948 map (Figure 5), and moderately dense residential development extends from Foothill Expressway to north of Mountain View near Bayshore Boulevard (now Highway 101).

The 1961 print (Figure 1) shows virtually the same features with increased development along the project route and Foothill College at its current location.

City Business Directories

City business directories, including Polk City Directories and Haines Directories, were researched to learn of past site usage and occupants along major roads in the study area. These directories are sometimes available back to the turn of the century and were updated yearly. They list by address, the names of businesses and residents at each address in the city for which the volume was prepared. The Mountain View library only had the Haines Criss Cross Directory for the year 1991. Polk City Directories were available for the City of Palo Alto at the Palo Alto City Library for the years 1940, 1950, 1959/60, 1970 and 1978. The Los Altos library did not have business directories available.

Major streets surrounding the project alignment in Los Altos, Mountain View and Palo Alto were reviewed in the 1991 Haines Criss Cross Directory. Streets examined in the directory included Main and First and Second Streets, South San Antonio Road, El Camino Real and Del Monte Avenues in Los Altos. Also examined were listings under El Camino Real in Palo Alto and Mountain View, and California Street in Mountain View. The only sites of possible concern included the service stations identified in the VISTA survey, above, and a number of dry cleaners located in the retail areas.

Other key streets that were examined in the Polk Palo Alto City Directory included West El Camino Real, Arastradero, and Miranda south of Arastradero. Prior to 1950 Miranda Avenue was not listed and prior to the 1940 directory, Arastradero was not mentioned.

The Fairchild Semiconductor facility was listed at 4001 Miranda Avenue in both the 1970 and 1978 directories. Alta Mesa Service gas station was noted at 4200 El Camino Real, and a Hudson gas station was reported at 4230 El Camino Real in the same years. In addition, at 4291 El Camino Real, the prior site of California First Bank (now Union Bank), at the intersection of Adobe Creek and El Camino Real, Cabana Enco Service and U-Haul Trailer Rentals is listed. In 1959/60, service stations are noted at 4200, 4201 and 4230 El Camino Real. In the 1950 Polk City Directory for Palo Alto, service stations are listed at 4185 and 4200 El Camino Real, however in the 1940 directory, El Camino Real listings do not extend south far enough to include the study area.

Sanborn Fire Insurance Maps

According to VISTA the only Sanborn Fire Insurance maps available for the alignment are dated 1926 and 1932 and cover the Los Altos area. These maps, covering the alignment from Station 418± to Station 455±, do not show any fuel storage tanks, oil or gas wells or other possible notations of environmental concern. Five possible water well sites are shown, (1) north of the intersection of Fremont and Burke Avenues, (2) west of the intersection of Burke Road and Hillway (water tank shown), (3) along the right bank of the creek at about Station 437+75, (4) on the south side of Lincoln Avenue, and (5) a possible community supply well on Los Altos Water Company property off University Avenue south of Meridian. A copy of the 1932 map, with approximate project stationing shown, is presented in the pocket at the end of this report.

Site Reconnaissance Information

The creek alignment was walked in its entirety during September 1993, with the exception of a few short (50 to 100 foot) stretches where full blackberry overgrowth made the creek impassable. During the site walk observations were made of soil staining, any evidence of tanks or hazardous materials containers, unusual odors, debris fill, outfalls and evidence of wells. Steep banks, fences and trespassing concerns limited the extent of our reconnaissance beyond the immediate channel in places. A set of preliminary plan and profile sheets for the alignment dated May 17, 1993, as provided by the District, was used as a reference for our reconnaissance.

Suspicious Features

Six sites were identified as possible contaminant sources and reported to the SCVWD in a "Surface Soil Sampling Plan" dated October 25, 1993. With approval by the District, all identified sites were sampled as described in the "Site Specific Findings" section. Working upstream (and up-station) the sites were:

(1) the waste storage area of Alta Mesa Memorial Park;
(2) septic leachate in the area of Morningside Private Drive;
(3) the Foothill College Maintenance Yard;
(4) a creek bank landfill around Station 613;
(5) a creek bank landfill around Station 626; and
(6) the waste storage area of Hidden Villa.

Results of Sampling and Analysis

Sampling procedures are described under the respective "Site Specific Findings" sections and in the adapted excerpts of Terratech's Standard Procedures in Appendix B. The analytical results are summarized in Table 1. Copies of the Certified analytical reports are presented in Appendix C. Trace amounts (up to 37 parts per million) of petroleum hydrocarbons, quantified as diesel, were found in all soil samples/composites. None of the concentrations seem significant and no associated BTEX or PNA compounds were found. The concentrations of metals were within naturally occurring ranges and well below TTLC hazardous thresholds. There were no significantly elevated levels from location to location. No solvents were found in any of the samples. The fecal coliform tested positive, confirming a septic system discharge around Station 468.

Well Information

Although not a targeted task, evidence of domestic wells was recorded in the field and locations of suspected well heads are shown in Figures 6 through 9 and Figure 12 (Foothill College). Possible wells were noted at the following locations:

LOCATION	DESCRIPTION
1. Station 397± (Figure 6)	Well house with natural gas (?) fuel tank, sanitary seal appears to be intact, well appears to be in disuse (see Photo 1). Located at Hau residence on Edith Road.
2. Station 495± (Figure 7)	Well house, appears to be rundown, not viewed up close. On Clifford (?) property, Canata Way.
3. Station 508± (Figure 12)	Reportedly a Caltrans municipal and industrial well, (#06S2W3 1Q10). Located in Foothill College Maintenance Yard east of the paint shop, just inside the fence adjacent to Adobe Creek (see Photo 2).

4. Station 565± (Figure 8)	Appears to be a well casing exposed at the surface just east of existing water storage tanks and community water pipeline. Located on the east side of Rhus Ridge Road, from Wilson property.
5. Station 577± (Figure 9)	Well house, inside not exposed. Located near Phy property on Moody Road.

Additionally, it was learned that Alta Mesa Memorial Park has four irrigation wells on-site (see Alta Mesa section of "Site Specific Findings").

Interview Information

Persons with likely familiarity with the Adobe Creek alignment with respect to hazardous materials conditions and related factors were contacted. They were asked to respond to the ASTM questionnaire (Appendix C) and questioned regarding their specific knowledge of possible conditions threatening the creek. Summaries of the two general interviews are presented below. Information on interviews of facility personnel are presented in the corresponding "Site Specific Findings" section.

Scott Wilson - Santa Clara Valley Water District,

Mr. Scott Wilson, Associate Civil Engineer with the District provided detailed information regarding access and hazards along the alignment. He was interviewed on September 1, 1993 to obtain preliminary information regarding alignment access and his general site knowledge, and again on October 23, 1993 for specifics detailed on the ASTM questionnaire. He and his crew have walked the alignment seasonally observing outfalls into the channel and erosion and obstruction problems. He had observed the maintenance facilities associated with Alta Mesa Cemetery and Foothill College and provided information regarding the water well at Edith Avenue. Mr. Wilson was not aware of environmental conditions, past or present, likely to pose a significant threat to the alignment.

Dan Dunlap, Battalion Chief - Los Altos Fire Department

Chief Dunlap, interviewed on October 25, 1993, indicated that the hazardous materials cases and hazardous materials handling permitting responsibilities for Los Altos have been relegated to the Santa Clara County Hazardous Materials Program. Chief Dunlap has been with the Fire Department for 16 years. He was not aware of any environmental conditions or incidents that would have impacted the site negatively. He was on duty when the paint shop at Foothill College burned in 1990, and indicated that County Environmental Health was involved and measures were taken to contain chemicals and effluent at the site.

SITE SPECIFIC FINDINGS

Specific attention was directed toward sites with identifiable environmental hazards present such as prior toxic incidents, landfill/disposal areas, fuel tanks, and drums or hazardous materials storage. Sites were further judged based on their proximity to the creek and the likelihood of impact of the specific type of contaminant to the project. All of the sites discussed in this section lie directly adjacent to Adobe Creek.

Specific sampling points were selected based on conditions encountered in the field and our experience with similar site conditions. Specifically, a sample was retrieved if it appeared that analyses would provide useful information as to the likelihood, general type and degree of suspected contamination.

ALTA MESA MEMORIAL PARK - VISTA Site No. 18

Alta Mesa Memorial Park is located on the west (right) bank (looking upstream) of Adobe Creek from Station 277± to Station 312±. As shown in Figure 2, this facility is bounded to the west by Arastradero Road and extends nearly to Foothill Expressway to the south.

Three underground fuel storage tanks are in use at the facility. These include; (1) a 1,500-gallon diesel tank located adjacent to the crematory, (2) a 500-gallon diesel tank located near the maintenance area, and (3) a 500-gallon gasoline tank located adjacent to the office. Memorial Park staff (see interview below) indicated that monthly vapor monitoring of the tanks is performed and that recent monitoring events have not revealed evidence of leakage. This was substantiated by monitoring reports in the Palo Alto Fire Department files.

Soil Sampling and Analysis

Alta Mesa maintains a waste storage area near their maintenance yard at the south end of the property, along the west bank of Adobe Creek (Station 310±, see Figure 10). Derelict equipment, scattered debris and several empty drums were observed in the area. No obvious staining or odors or other indications of contamination are evident in the area or along the creek channel in this vicinity.

Compounds of concern commonly associated with refuse handling, storage and disposal areas include metals, petroleum hydrocarbons including aromatic volatile organic compounds (VOC's), and solvents (chlorinated VOC's). To test for the presence of these compounds, the following analyses were performed on a composite soil sample (ALTM 310) taken downhill of the disposal area:

- Priority Pollutant metals (Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl & Zn) using various approved EPA methods; Total Extractable Petroleum

  Hydrocarbons (TPH) using EPA Method 8015 (modified); and broad scan of VOC's using EPA Method 8240.

Soil sample ALTM310 was retrieved from the top of the bank on the northwest side of Adobe Creek (near Station 310), directly downslope from the Alta Mesa refuse storage area, as shown in Figure 10. The sample was retrieved from two locations about 10 feet apart at a depth of 12 inches and composited by the laboratory for testing. Compositing multiple samples provides a better view of conditions for this type of non-paint source. Based on our experience with the possible occurrence of contaminant runoff being investigated here, the 1-2 foot depth is within a zone of typical maximum concentrations; below the surface zone of high volatilization and biodegradation, and above the deeper zones of attenuation.

A trace of petroleum was found in the sample composite (see Table 1). Concentrations of detected metals appear to be well within naturally occurring ranges. No VOC's were detected.

Interview Information

Marilyn Talbot, Assistant Manager at the Alta Mesa Memorial Park, was interviewed on October 25, 1993, regarding her knowledge of environmental conditions and hazardous materials handling at 695 Arastradero. Ms. Talbot has worked at Alta Mesa for 13 years.

Ms. Talbot indicated that the site is on the California LUST list (Number 18, Appendix A) due to one incident of a positive reading during vapor monitoring of existing underground fuel storage tanks located on-site. The monitoring had been performed immediately after tanks had been filled, and subsequent readings were all negative for the presence of petroleum hydrocarbon vapors. It is believed that the positive reading was the result of fumes at the surface from minor spillage during tank filling operations. No followup work has been required, and Alta Mesa Memorial has requested that the case be removed from the LUST list. Information in the Palo Alto Fire Department files substantiated the one-time spike in vapor readings, however no documentation of imminent case closure was found.

Ms. Talbot provided details concerning the status of the three permitted tanks on the site as noted above. Vadose wells at the tank sites are monitored monthly. The on-site vehicle maintenance shop recycles waste oil monthly through Evergreen Petroleum. In the interim, waste oil is stored with double containment leak protection.

Four agricultural wells are located on the property for use in irrigation, according to Ms. Talbot. The water is stored in a large tank near the maintenance yard (see Figure 10). The water is technically considered non-potable but is tested annually and has consistently met water quality standards.

Regulatory List and File Review Information

As shown in the VISTA report in Appendix A, Alta Mesa Memorial Park is listed in the Cal-EPA list under the Underground Tank (UTANK) and Leaking Tank (LTANK or LUST) databases. Status of the leaking tank listing was expanded on above.

Alta Mesa files reviewed at the Palo Alto Fire Department showed three permitted tanks on the property as noted above. Additionally, a small hydraulic oil spill in 1990 was documented in the files. Files indicated that the impacted soil was adequately cleaned up to acceptable levels (less than 100 ppm total petroleum hydrocarbons).

Summary of Findings

Soil sampling results at Alta Mesa Memorial Park did not reveal indications of significant impact from the refuse storage area. A review of available information regarding status of underground fuel tanks and hazardous materials incidents at the Park did not reveal conditions of likely risk to the Adobe Creek drainage.

MORNINGSIDE PRIVATE DRIVE - Not Listed

A strong sewage odor was noted around Station 468 (see Figure 10) during the initial site walk. During a subsequent visit on October 29, 1993, a liquid that appeared to be effluent was draining into the channel from a 6-inch diameter partially buried pipe on the left bank (looking upstream). Fecal Coliform analysis to verify the origin of the effluent was performed on a water sample (DWL 465) collected into a plastic jar at the base of the effluent site.

The fecal coliform test returned positive, confirming the presence of septic leachate in this area. This site was not found on regulatory lists or in the files review for this project.

FOOTHILL COLLEGE MAINTENANCE YARD - VISTA Site No. 17

The Foothill College Maintenance Yard is located along the south bank of Adobe Creek near the southeast corner of the campus at about Station 508. The yard maintains a paint shop, vehicle maintenance and fueling facilities and other storage buildings.

Soil Sampling and Analysis

On Thanksgiving Day 1990, the Foothill College Maintenance Yard paint shop was completely destroyed in a fire. The shop was located on the east side (left bank looking upstream) of the channel, immediately adjacent to the Creek (Station 508±, see Figure 12, Photo 3). According to Mr. Bill Schooler, Maintenance Supervisor at the college, water from the fire fighting effort was collected in a bermed area and subsequently removed from the site by Erickson, Inc., a hazardous materials disposal firm located in Richmond, California.

Contaminants commonly associated with maintenance yard facilities where automotive work, painting, cleaning and electrical operations are performed were targeted in sampling of the site soils. These included metals, VOC's, petroleum hydrocarbons, and polynuclear aromatics (PNA's). PNA's are a group of compounds of varying toxicity that are particularly prevalent when organic materials are burned. Naphthalene is probably the most recognized PNA compound. The following analyses were therefore performed on a composite sample (FH 508) from adjacent to the former paint shop:

> Priority Pollutant metals using various approved EPA methods; TPH using EPA 8015 (modified), PNA's using EPA Method 8270; and VOC's using EPA Method 8240.

Two samples were retrieved 10 feet apart, from between the former paint shop and the channel, near Station 508, as shown in Figure 12. These samples were composited (FH 508) by the laboratory for testing. The rationale behind compositing and the 1-2 foot depth interval were as discussed for Alta Mesa.

A trace of petroleum was found in the sample composite (see Table 1). Concentrations of detected metals appear to be well within naturally occurring ranges. No PNA's or VOC's were detected.

Interview Information

Maintenance yard personnel, including Mr. Bill Schooler, Maintenance Supervisor and Mr. Dave Paulsen, Yard Manager were interviewed during a site visit on October 12, 1993.

Mr. Bill Schooler is the current Maintenance Supervisor of both Foothill and DeAnza Colleges. Mr. Schooler took over maintenance yard supervision in 1987. Since then he has been involved with the removal of two underground fuel storage tanks and the monitoring of a third fuel tank at the site.

In spring of 1993 a 500-gallon tank was removed from the fire station site at Foothill College, and an 8,000 gallon diesel tank was removed from the gymnasium. These tank sites were closed under Santa Clara County closure permits numbers 93-003 and 93-020, respectively. Copies of the closure permits were presented during the interview. No evidence of soil or ground water contamination was noted at these sites, and the cases were closed, according to Mr. Schooler.

A tank containing asphalt sealer was also removed from the site in 1987 by EXCELTECH, and verification soil samples contained very low levels of petroleum hydrocarbons. Mr. Schooler indicated that Foothill College was on the LUST list (Number 17, Appendix A) pending final closure of the asphalt tank site. Apparently final tank closure report documents need to be located and submitted.

A 6,000-gallon underground gasoline storage tank supplies fuel to vehicles at the Maintenance Yard. This tank was installed in 1977 and is monitored monthly through a 6-foot-deep vapor monitoring well at the tank site.

Chemicals used in the Auto Shop, new Paint Shop and for other maintenance purposes are stored in fenced or locked storage areas inside the Maintenance Yard (see Photo 4). Secondary containment is present at most of these locations. Waste oil, batteries and used filters are drummed for periodic pickup and recycling by NORCAL. These materials result in the College being included on the Cortese and HWIS lists (Appendix A report). Two wash racks are used for cleaning of maintenance equipment, vehicles and painting equipment. Effluent from these racks is collected, treated and disposed of into the Palo Alto sanitary sewer system under permit number POTW #2028.

Mr. Schooler was aware of one incident with potential to introduce hazardous materials into Adobe Creek. On Thanksgiving Day in 1990, the paint shop at the maintenance yard burned to the ground. According to Mr. Schooler, the site was bermed during fire fighting efforts, and all liquids were collected and offhauled by ERICKSON, Inc., a hazardous materials hauler. According to Mr. Schooler, all of the many agencies involved in the fire and followup issued closure after site cleanup activities were complete.

Mr. Dave Paulsen, Maintenance Manager at Foothill College was interviewed and led us on a walk-through of the maintenance yard to observe hazardous materials handling at the site. No indications of spills, staining or other hazardous materials concerns were observed. Regulated materials appeared to be properly labelled and stored at one of several locked, double contained areas within the fenced maintenance yard. Mr. Paulsen was unaware of any hazardous materials conditions past or present, likely to impact the project site.

Regulatory List and File Review Information

As shown in the VISTA report in Appendix A, Foothill College is also listed in the CAL-EPA list under the Underground Tank (UTANK), Hazardous Waste Generators, Treatment, Storage & Disposal (HWIS) and the Facility Index System (FINDS) databases. Underground fuel storage tanks removed at Foothill appear to have been closed according to the listing. This was further substantiated in SCVWD files which contained documentation and laboratory results indicating tank case closures. The HWIS listing records facilities storing, handling and disposing controlled hazardous materials such as paint shop materials and chemistry laboratory compounds. The FINDS listing is an internal EPA tracking system of sites listed by other agencies, therefore is redundant of the other listings.

Summary of Findings

Soil sampling results at Foothill College did not reveal indications of significant impact from the conflagration of the paint shop. A review of available information regarding status of underground fuel tanks and hazardous materials incidents at the College did not reveal conditions of likely risk to the Adobe Creek drainage.

HIDDEN VILLA - Not Listed

Hidden Villa is an educational facility comprised of an active farm, visitors center and youth hostel. Horse pasture belonging to the Trust for Hidden Villa borders the right bank of Adobe Creek (looking upstream) from Station 613± to the entrance to the facility at Station 636±. The refuse and recycling storage area for Hidden Villa is located just downstream of the access road to the facility on the left bank of Adobe Creek.

Soil Sampling and Analysis

An old landfill was observed along the left bank of the creek (looking upstream) in the area around Station 613. Landfilled debris included wood and metal debris, old appliances such as refrigerators, and water heaters, as well as car parts and chassis and metal shelving. The contents of the landfill appeared to be old (metal debris was very rusted). No obvious indications of contamination, such as odors or staining, were apparent.

Compounds typically creating an environmental hazard at old domestic landfills include heavier petroleum hydrocarbons and metals, such as lead from old batteries. Analyses run on soil from the site (LF 613) therefore included:

> Priority Pollutant metals (13 listed above) using approved EPA and extractable TPH using EPA Method 8015 (modified).

To provide information on possible other toxics being present, we also had the samples analyzed for VOC's (EPA Method 8240) and PNA's (EPA Method 8270).

Three samples were retrieved from a depth of about 12 inches at the location shown in Figure 13. Samples were retrieved from just downstream of the toe of the debris pile, near the stream at 30 foot intervals. The three samples were composited (LF 613) by the laboratory prior to analysis. The rationale behind compositing and the depth of sampling was similar to that presented for Alta Mesa.

A second old landfill was observed along the right bank of the creek in the area around Station 626 (see Photo 5). Landfilled debris appeared to be domestic in origin, comprised primarily of cans and bottles, and miscellaneous other metal and wood debris. The contents of the landfill appeared to be newer (painted ham can labels were legible, bottles had screw tops) than the site noted above, yet likely was 20 or 30 years old. No obvious indications of contamination, such as odors or staining, were observed.

Three samples were retrieved from a depth of 1 to 2 feet, at about 20 foot intervals near the toe of the debris slope as shown in Figure 14. These samples were composited (LF 626) by the laboratory for analysis of the same analytes as noted above. The rationale behind compositing and the depth of sampling was similar to that presented for Alta Mesa.

Hidden Villa maintains a waste storage and recycling area behind a gate adjacent to the left bank of Adobe Creek, just west of the entrance to the facility (Station 633±, see Figure 15). A dumpster (see Photo 6) and recycling bins for paper, aluminum, plastic and glass are also located in this area. About 29 55-gallons drums and several smaller containers are stockpiled near the dumpster at this site (see Photo 7). Most drums are empty, however, two labelled "Calgon Car Wash Hot Wax" were partially filled. Soil staining was observed east of the stockpiled drums, away from the creek.

Metals, petroleum hydrocarbons (including aromatic VOC's) and solvents (chlorinated VOC's) were targeted as the most likely potential contaminants associated with waste storage, disposal and drum storage of this small scale. The following analyses were performed on soil (HV 634) from near the drum storage area:

> Priority Pollutant metals (13 listed above) using approved EPA methods; extractable TPH using EPA method 8015 (modified); and aromatic and chlorinated VOC's using EPA Method 8240.

Two samples were retrieved from a near the top of the bank, immediately downslope from the tank storage area as shown in Figure 15. Samples were retrieved from a depth of one to two feet, and composited (HV 634) by the laboratory for analysis. The rationale behind compositing and the depth of sampling was similar to that presented for Alta Mesa.

Summary of Findings

As with the other project soil samples, traces of petroleum were found in the composites from the three suspicious Hidden Villa locations described above. Metal concentrations were within expected natural ranges and no VOC's or PNA's were detected. This site was not found in the regulatory databases or agency files reviewed for this study.

CONCLUSIONS

We have performed a Phase I Hazardous Materials Assessment in conformance with the general scope and limitations of ASTM Practice E 1527 for Upper Adobe Creek - El Camino Real to Hidden Villa, Santa Clara County, California. Any exceptions to, or deletions from, this practice are described in the "Limitations and Exceptions to Assessment" section of this report. The work included some spot sampling and testing in six locations of suspicious features. Our assessment has revealed no clear evidence of recognized hazardous materials concerns within, or immediately adjoining, the alignment. We did however find the following environmental conditions of note:

1. septic leachate from a residential property on Morningside Drive near Station 468;
2. creek bank landfills (domestic type refuse) around Station 613 and Station 636; and
3. storage of unlabelled and somewhat suspicious 55-gallon drums without secondary containment adjacent to the creek at the Hidden Villa waste storage area near Station 634.

Nearby properties identified as being impacted by (or handling) hazardous materials are listed and plotted in Appendix A. Based on our knowledge of the sites and the hydrogeologic conditions in this area of Santa Clara County together with input from environmental agency representatives familiar with the sites, our field reconnaissance and sampling results, it is our opinion that the subject property has a low likelihood of being impacted by any of the known, nearby contaminated sites.

Terratech does not believe that further hazardous material investigations are warranted for this section of Adobe Creek.

Report prepared by:

TERRATECH, INC.

Mary Bannister

Mary B. Bannister
REA 1300, CEG 1565

MARY B. BANNISTER
No. EG1565

Reviewed by:

TERRATECH, INC.

Eric R. Lautenbach
CE 42437

ERIC R. LAUTENBACH
No. C042437
EXP. 3/31/96

TABLE 1

SUMMARY OF ANALYTICAL TEST RESULTS[1]

UPPER ADOBE CREEK PHASE I HAZARDOUS MATERIALS ASSESSMENT
SANTA CLARA COUNTY, CALIFORNIA

(all concentrations reported in parts per million)

ANALYTE	SAMPLE LOCATION AND #				
	Alta Mesa Memorial	Foothill College	Creek Bank Landfills		Hidden Villa Waste
	(Sta 310±) ALTM 310	(Sta 508±) FH 508	(Sta 613±) LF 613	(Sta 626±) LF 626	(Sta 634±) HV 634
Total Petroleum Hydrocarbons[2]	17	25	15	6	37
METALS[3] (TTLC/STLC/Natural)					
Antimony (Sb) (500/15/0.6-10)	4.2	4.5	< 3.0	< 3.0	< 3.0
Arsenic (As) (500/5/1-40)	< 2.5	3.2	< 2.5	2.6	< 2.5
Beryllium (Be) (75/0.75/0.1-40)	0.39	0.50	0.31	0.39	0.31
Cadmium (Cd) (100/1/0.01-7)	0.29	< .50	< .25	< .25	0.33
Chromium (Cr) (2500/560/5-3000)	110	160	110	120	78
Copper (Cu) (2,500/25/2-100)	51	62	39	46	45
Lead (Pb) (1,000/5/2-200)	15	7.7	3.8	8.4	12
Mercury (Hg) (20/0.2/0.01-0.08)	< .095	< .10	< .095	< .10	< .095
Nickel (Ni) (2,000/20/5-1000)	80	140	91	100	72
Selenium (Se) (100/1/0.1-2)	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Silver (Ag) (100/5/0.1-5)	< 0.49	< .99	< .50	< .50	< .50
Thallium (Tl) (700/7/0.1-12)	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Zinc (Zn) (5,000/250/10-300)	63	69	47	60	66
Volatile Organics (VOCs) (EPA Method 8240)	< 0.050[4]	< 0.050	< 0.050	< 0.050	< 0.050
Polynuclear Aromatics (PNAs) (EPA Method 8270)	—[5]	< 0.3	< 0.3	< 0.3	—

(continued)

NOTES FOR ANALYTICAL DATA TABLE:

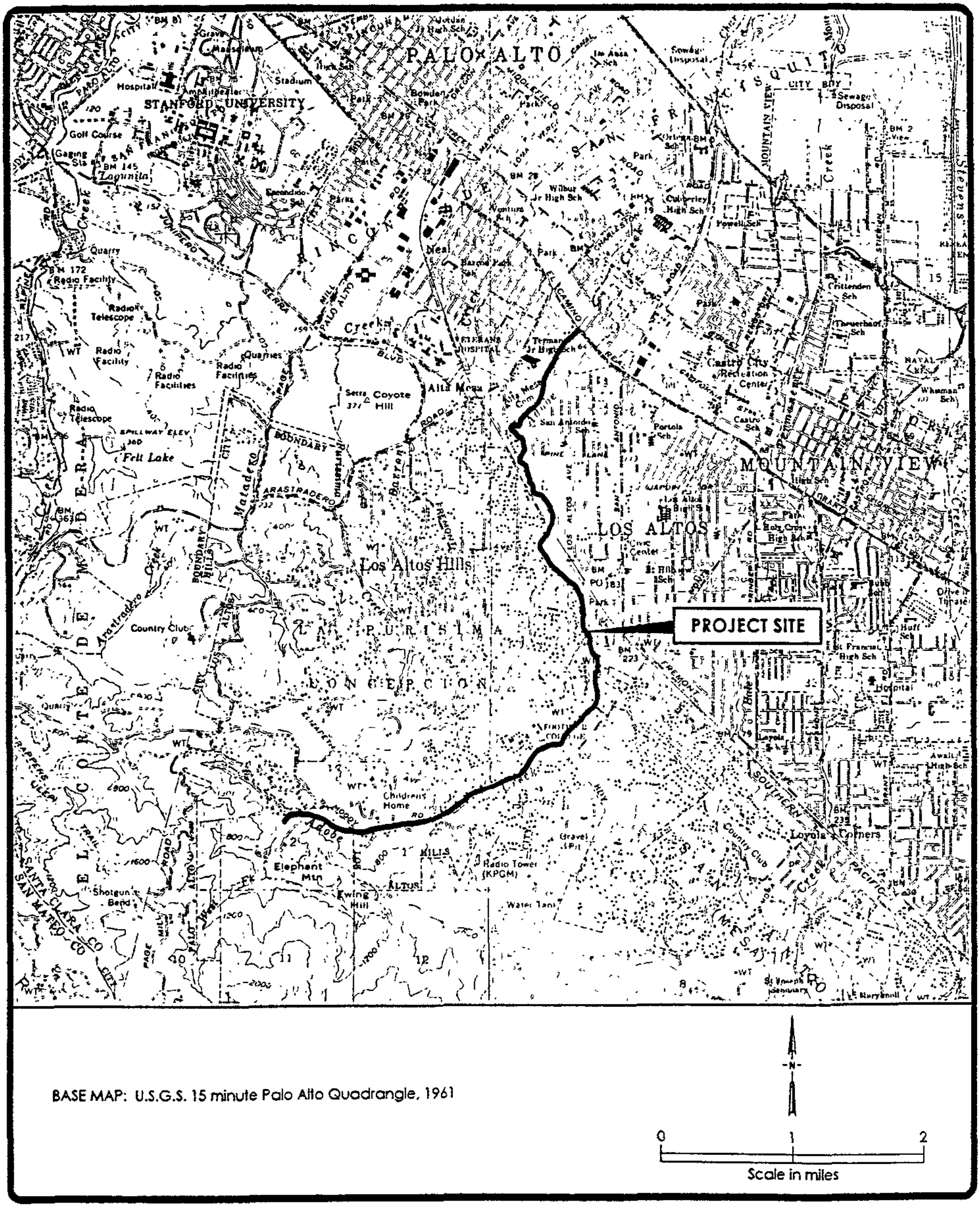
1 - Sample (DWL 465) of leachate from exposed pipe in creekside near Station 468± (residence on Morningside Drive) not included in table. Fecal coliform result was positive.

2 - Quantified as diesel.

3 - 13 EPA Priority Pollutant metals; TTLC - Total Threshold Limit Concentration and STLC - Soluble Threshold Limit Concentration, from California Title 26 hazardous waste designations; Natural - ref. Table 3.1 of *The Soil Chemistry of Hazardous Materials*, James Dragun, HMCRI, 1988. All values presented for relative comparison purposes only.

4 - Detection limits range between 0.005 and 0.050 ppm depending on specific chemical (see Appendix C).

5 - Sample not analyzed for this group of contaminants.



BASE MAP: U.S.G.S. 15 minute Palo Alto Quadrangle, 1961

Jan. 1994

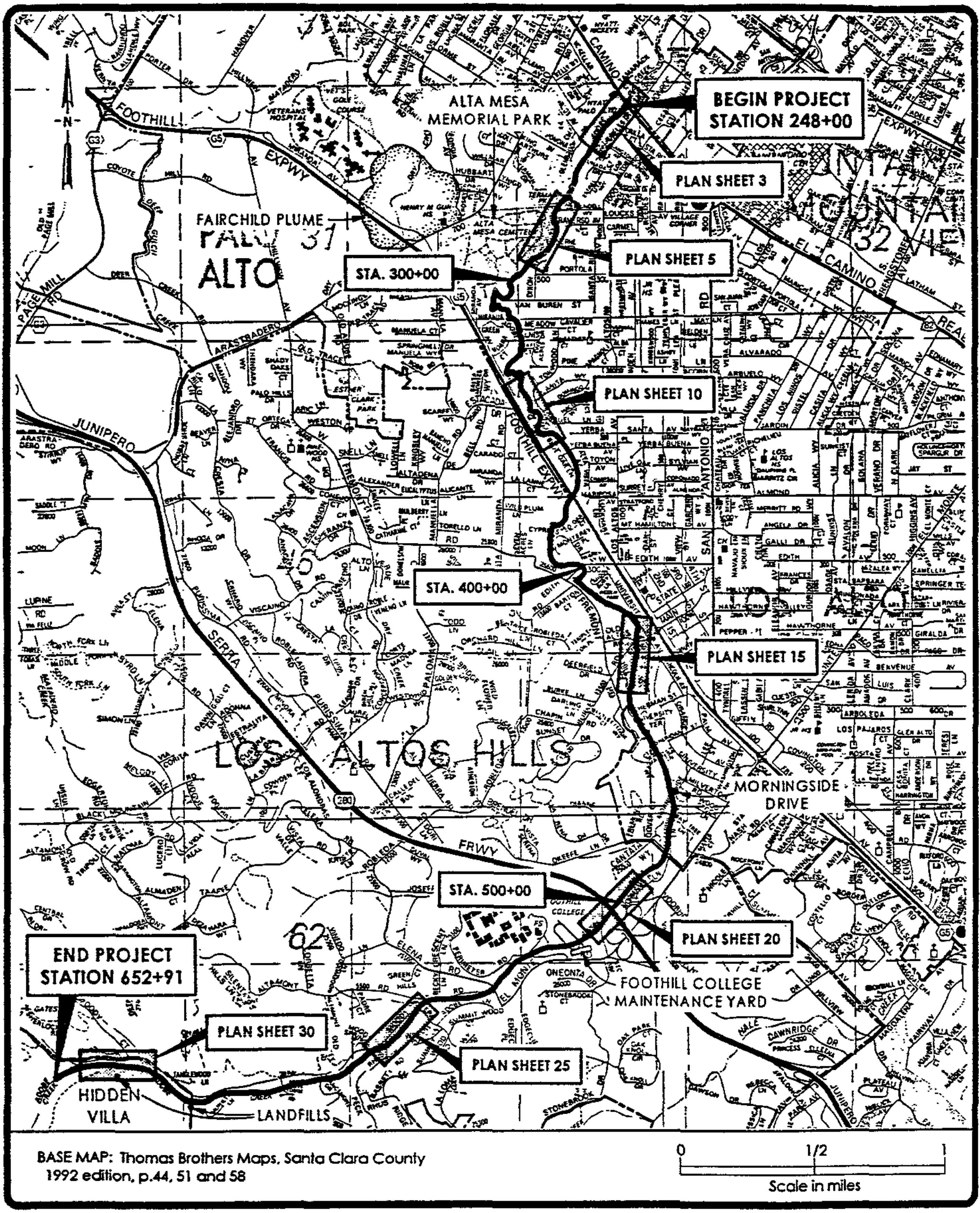
TERRATECH

PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

VICINITY MAP

FIGURE
1

PROJECT
5499



BASE MAP: Thomas Brothers Maps, Santa Clara County
1992 edition, p.44, 51 and 58

Jan. 1994
TERRATECH

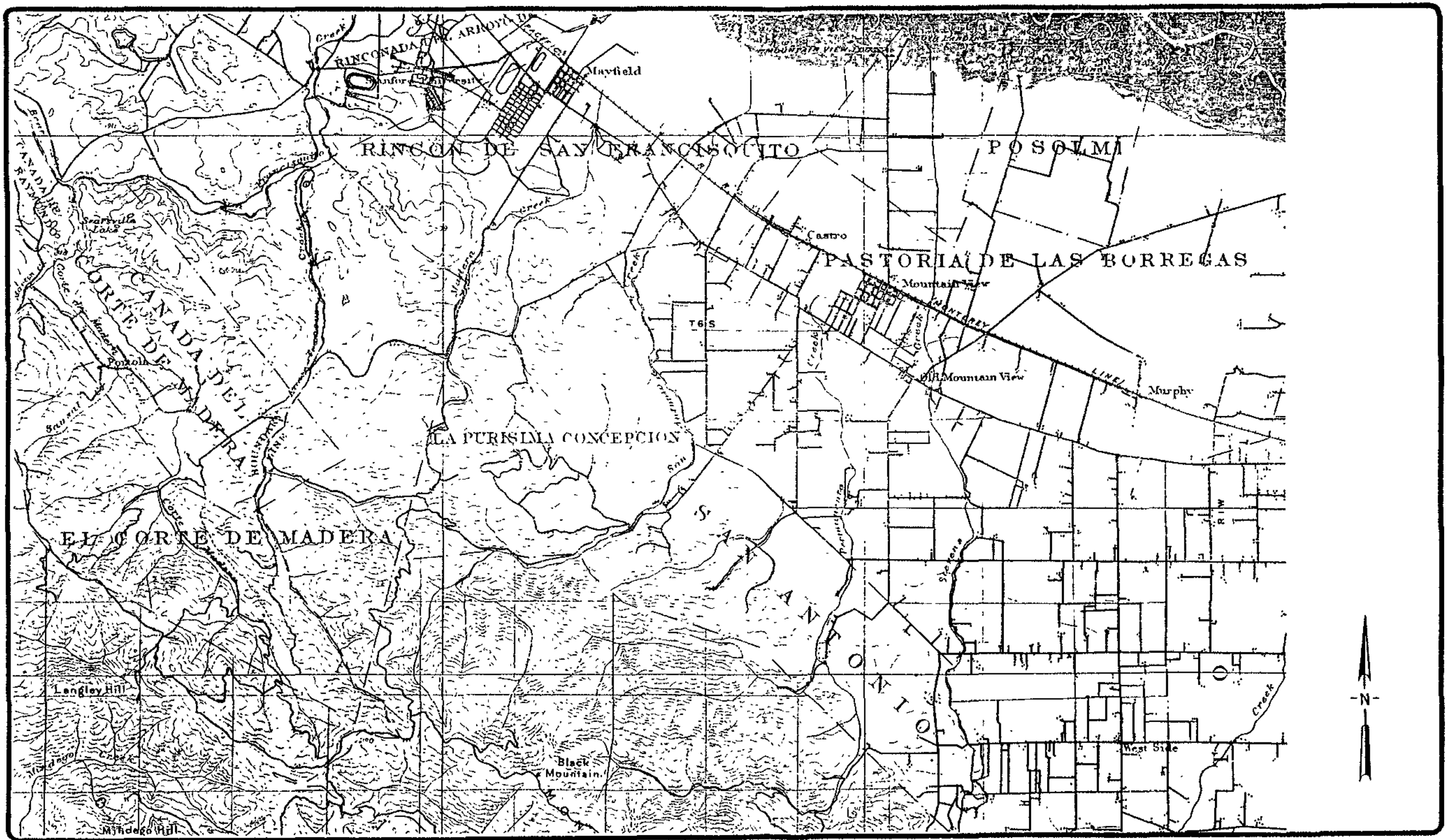
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

SITE MAP

FIGURE
2

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



Jan. 1994

TERRATECH

BASE MAP. U.S.G.S. Palo Alto Topographic Quadrangle, 1899, Scale. 1:62,500

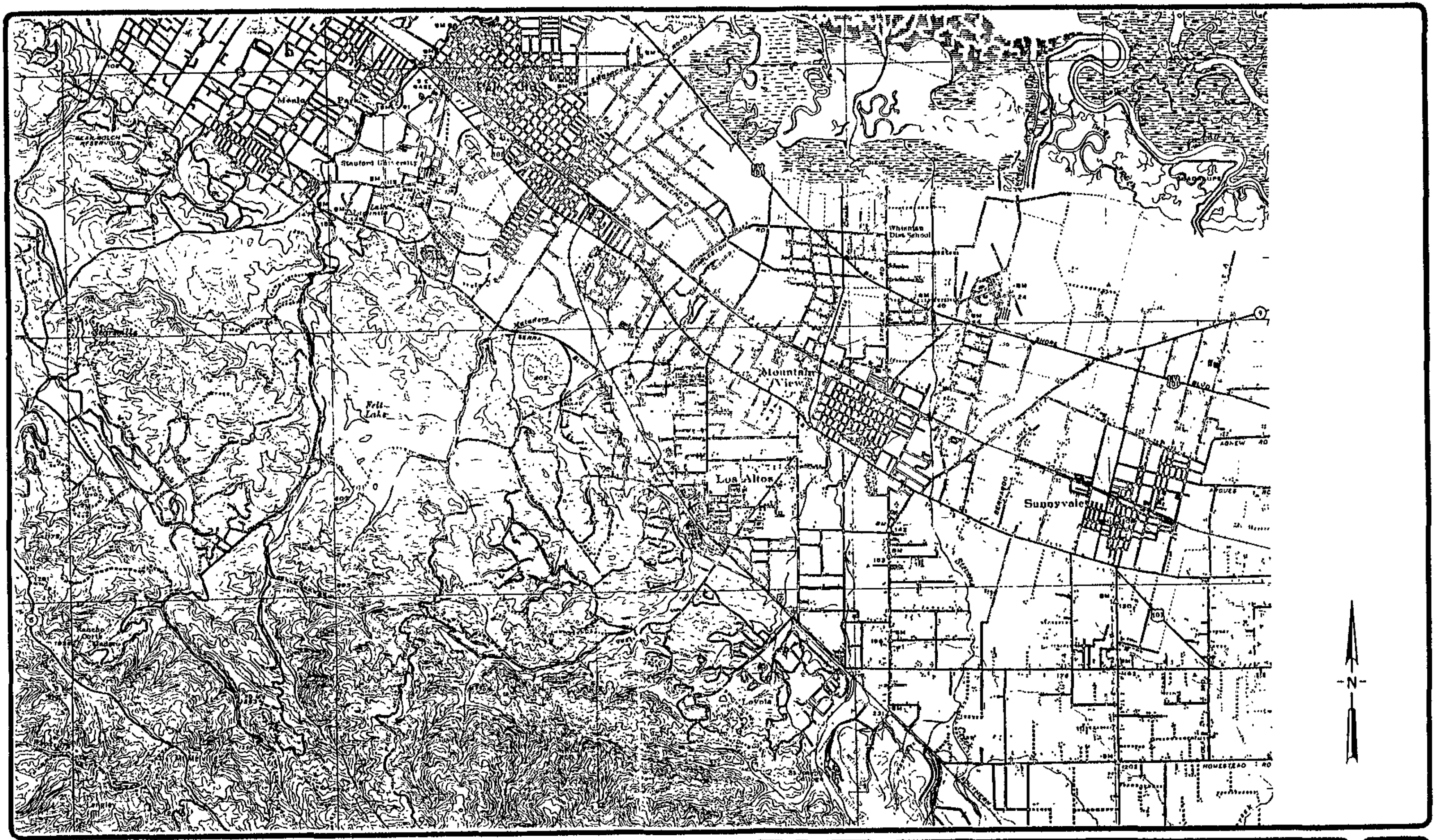
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

1899 UNITED STATES GEOLOGICAL SURVEY TOPOGRAPHIC MAP

FIGURE
3

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 300



TERRATECH

Jan. 1994

BASE MAP: U.S G.S. Palo Alto Topographic Quadrangle, 1940, Scale: 1:62,500

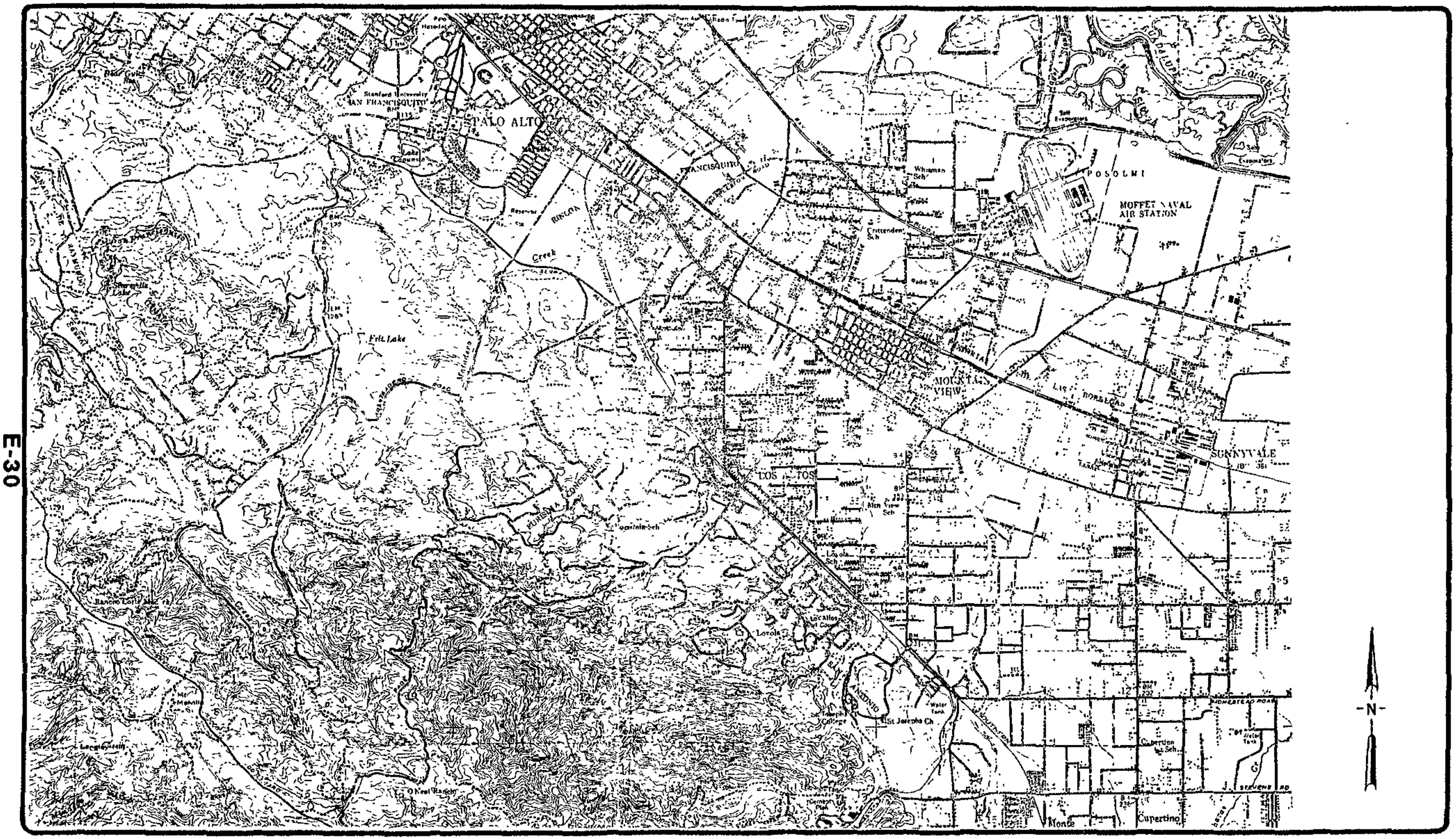
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

1940 UNITED STATES GEOLOGICAL SURVEY TOPOGRAPHIC MAP

FIGURE
4

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 300



Jan. 1994

TERRATECH

BASE MAP: U.S G.S. Palo Alto Topographic Quadrangle, 1948, Scale: 1:62,500

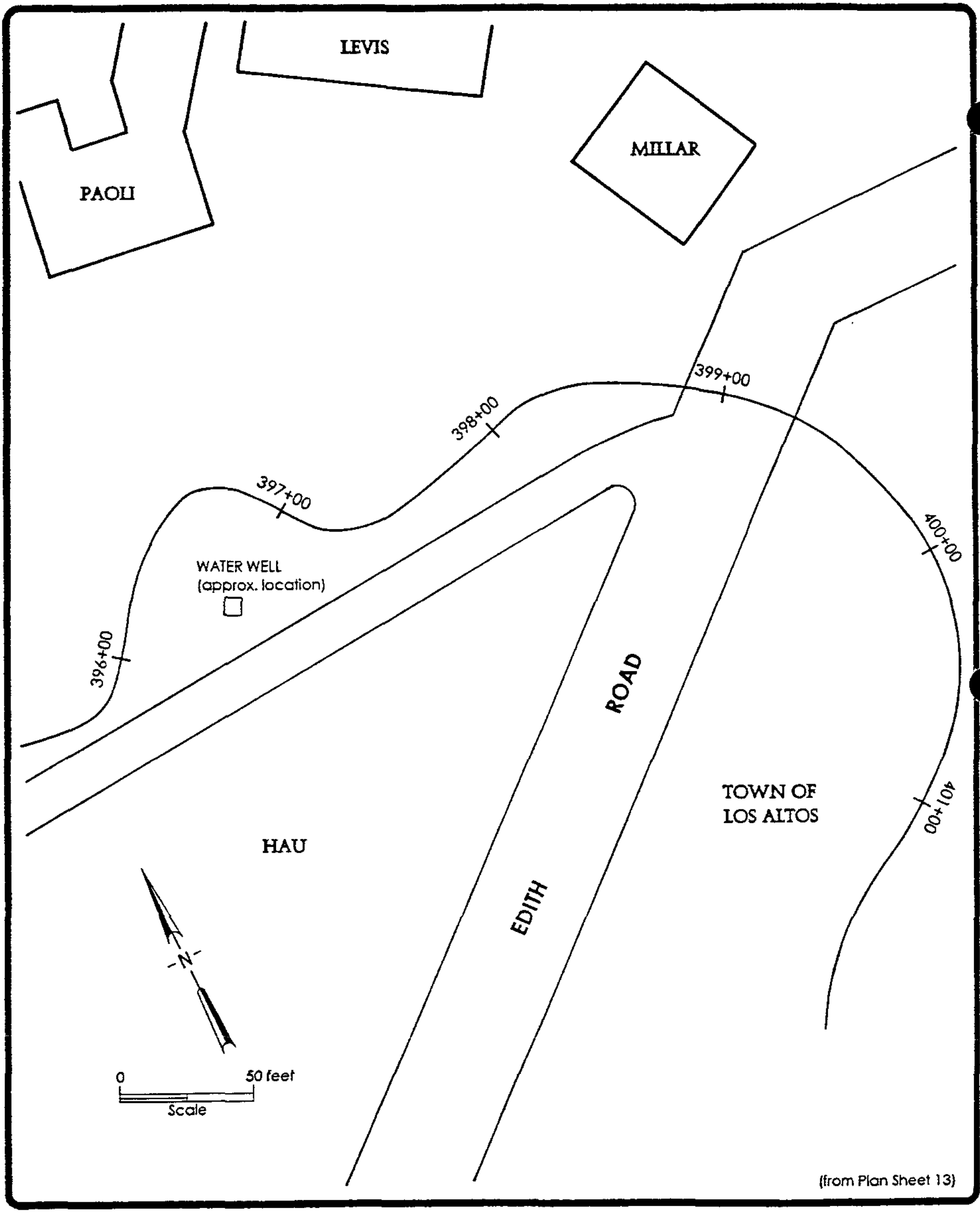
PHASE I HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

1948 UNITED STATES GEOLOGICAL SURVEY TOPOGRAPHIC MAP

FIGURE
5

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 300



(from Plan Sheet 13)

TERRATECH

Jan. 1994

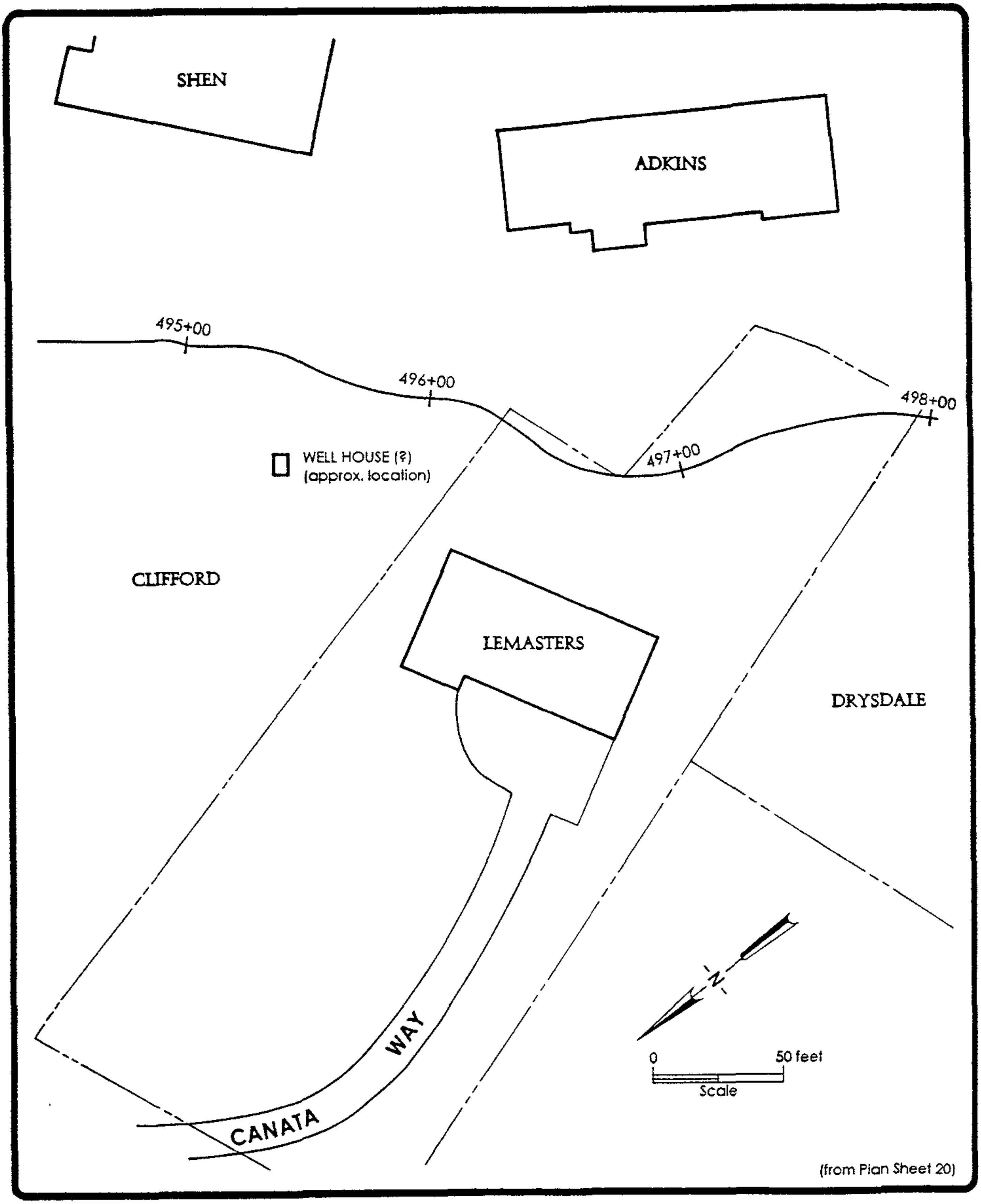
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

WATER WELL LOCATION - STA. 397±

FIGURE
6

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



TERRATECH

Jan. 1994

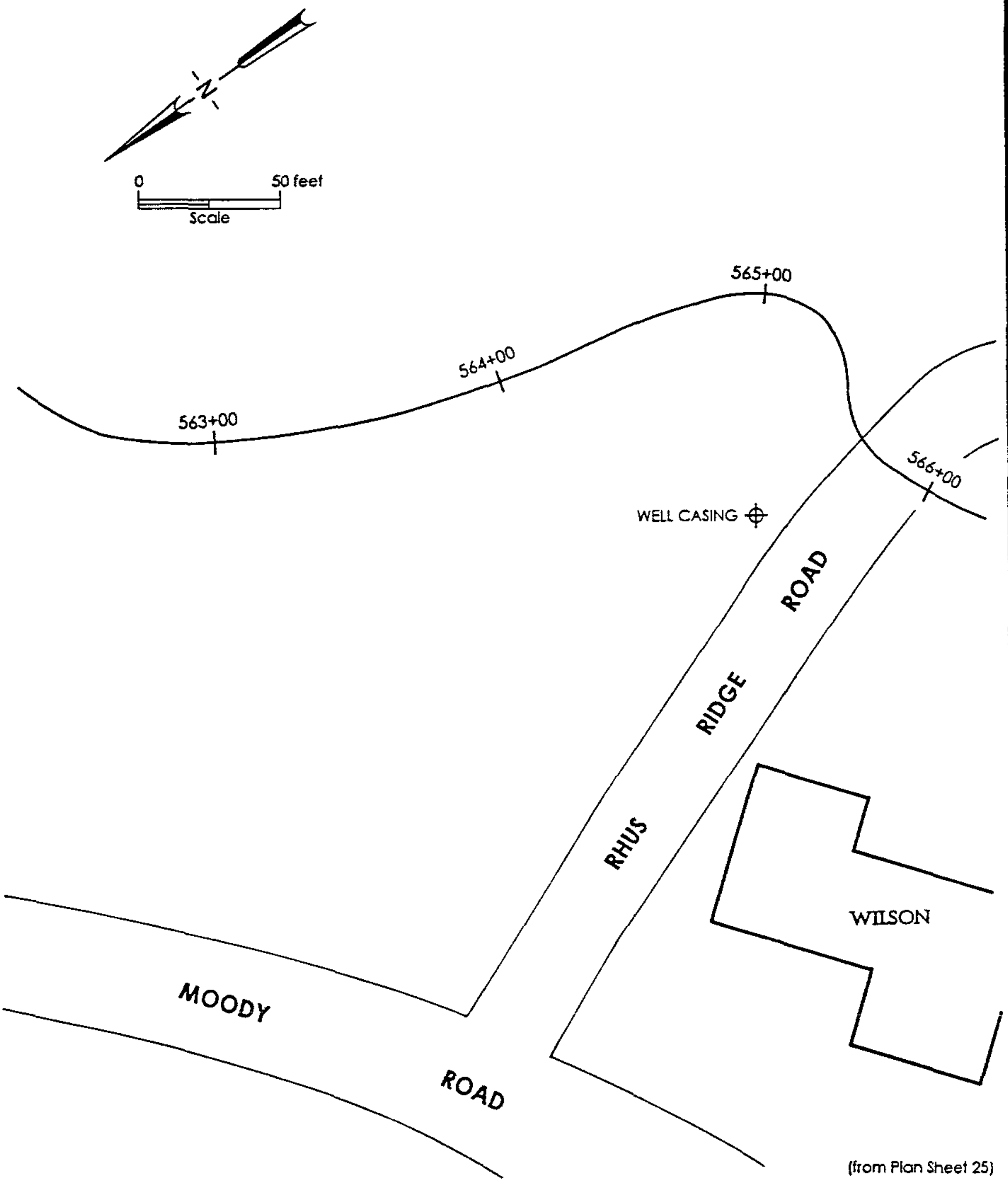
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

WATER WELL LOCATION - STA. 495±

FIGURE
7

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



(from Plan Sheet 25)

Jan. 1994

TERRATECH

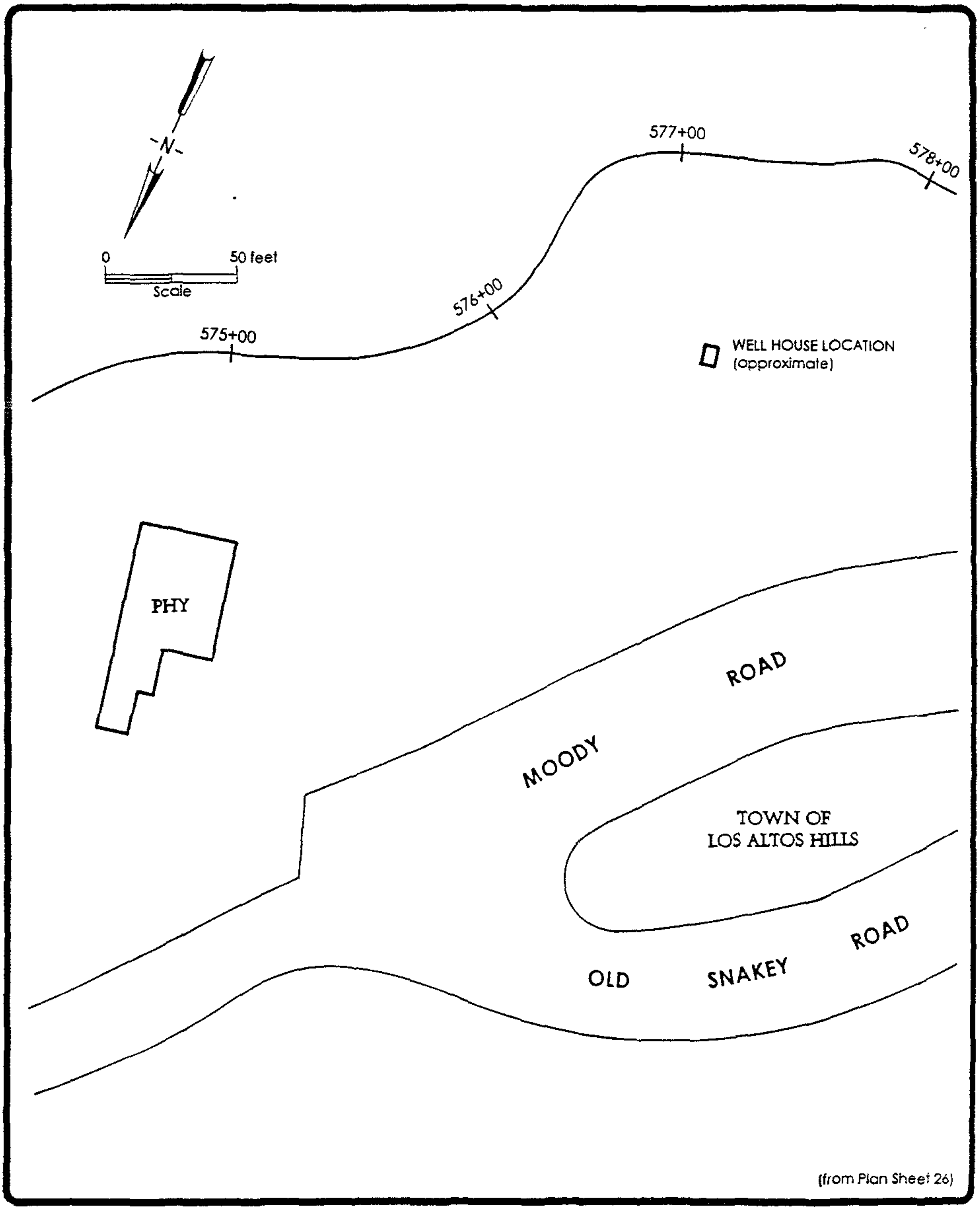
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

WATER WELL LOCATION - STA. 565±

FIGURE
8

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



TERRATECH

Jan. 1994

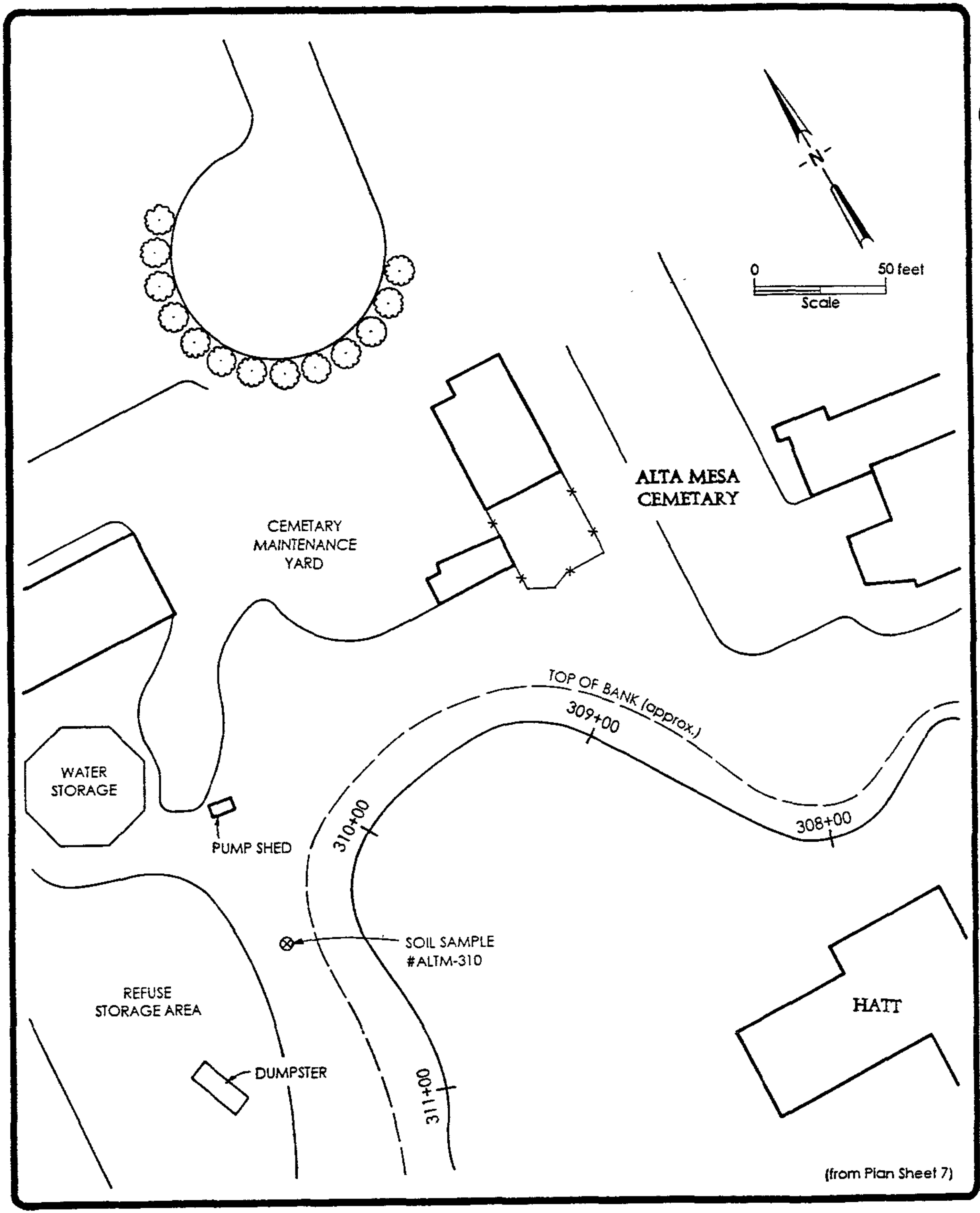
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

WATER WELL LOCATION - STA. 577±

FIGURE
9

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



(from Plan Sheet 7)

TERRATECH

Jan. 1994

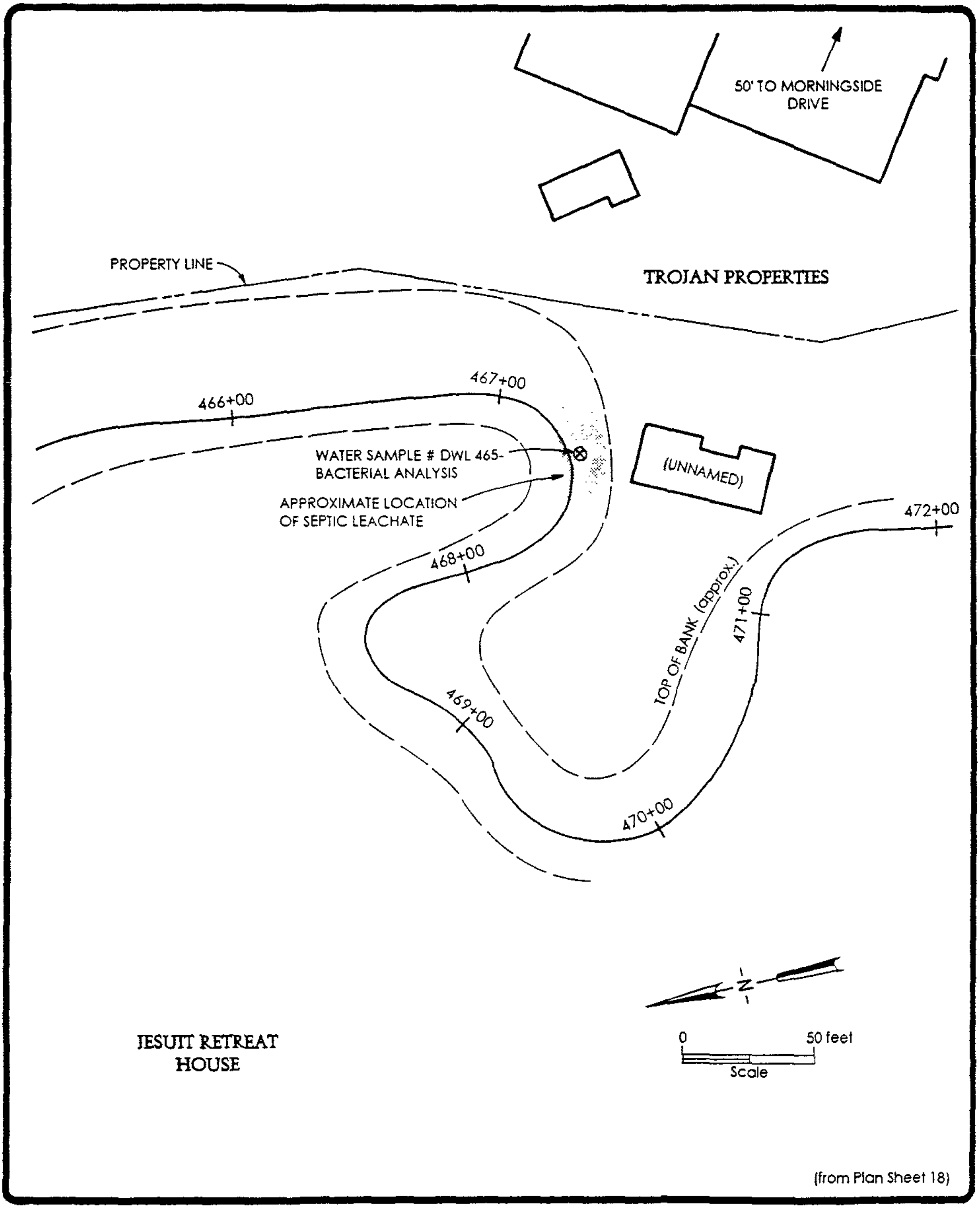
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

SAMPLING DETAIL - ALTA MESA MEMORIAL
STA. 308-311

FIGURE
10

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



(from Plan Sheet 18)

TERRATECH Jan. 1994

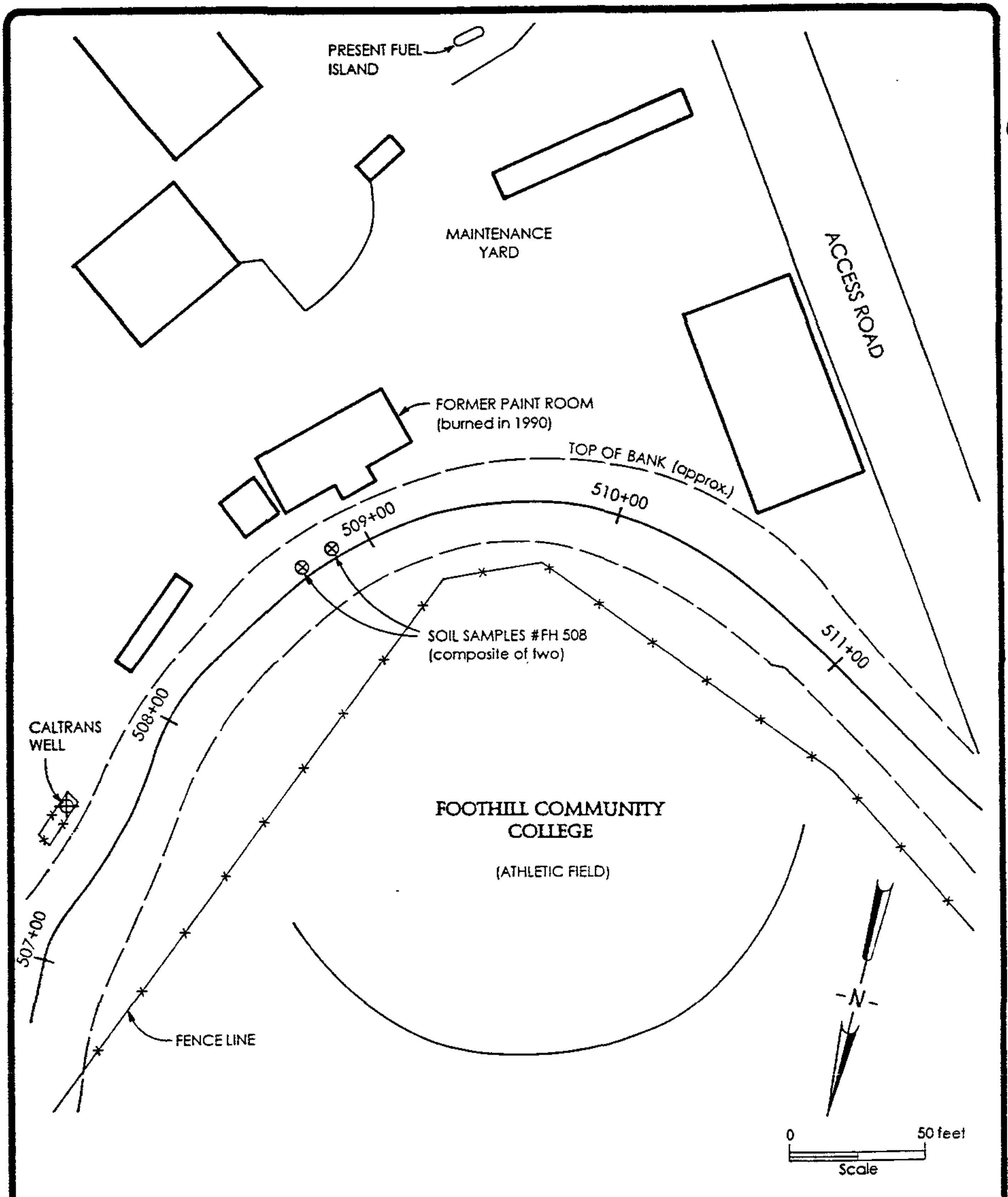
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

SAMPLING DETAIL - SEPTIC LEACHATE
STA. 468±

FIGURE
11

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



(from Plan Sheet 21)

TERRATECH

Jan. 1994

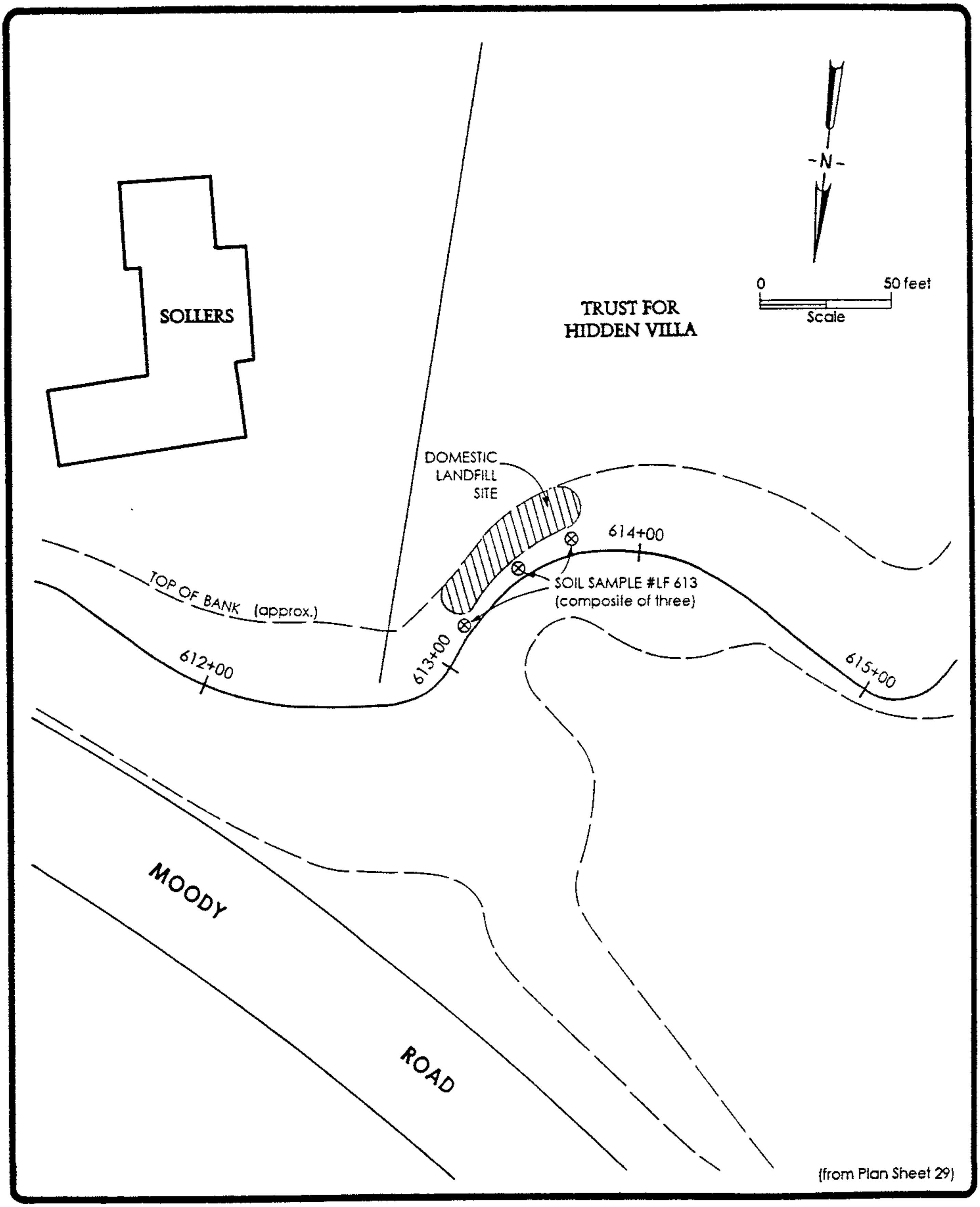
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

SAMPLING DETAIL - FOOTHILL COLLEGE
STA. 507-511

FIGURE
12

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



(from Plan Sheet 29)

TERRATECH

Jan. 1994

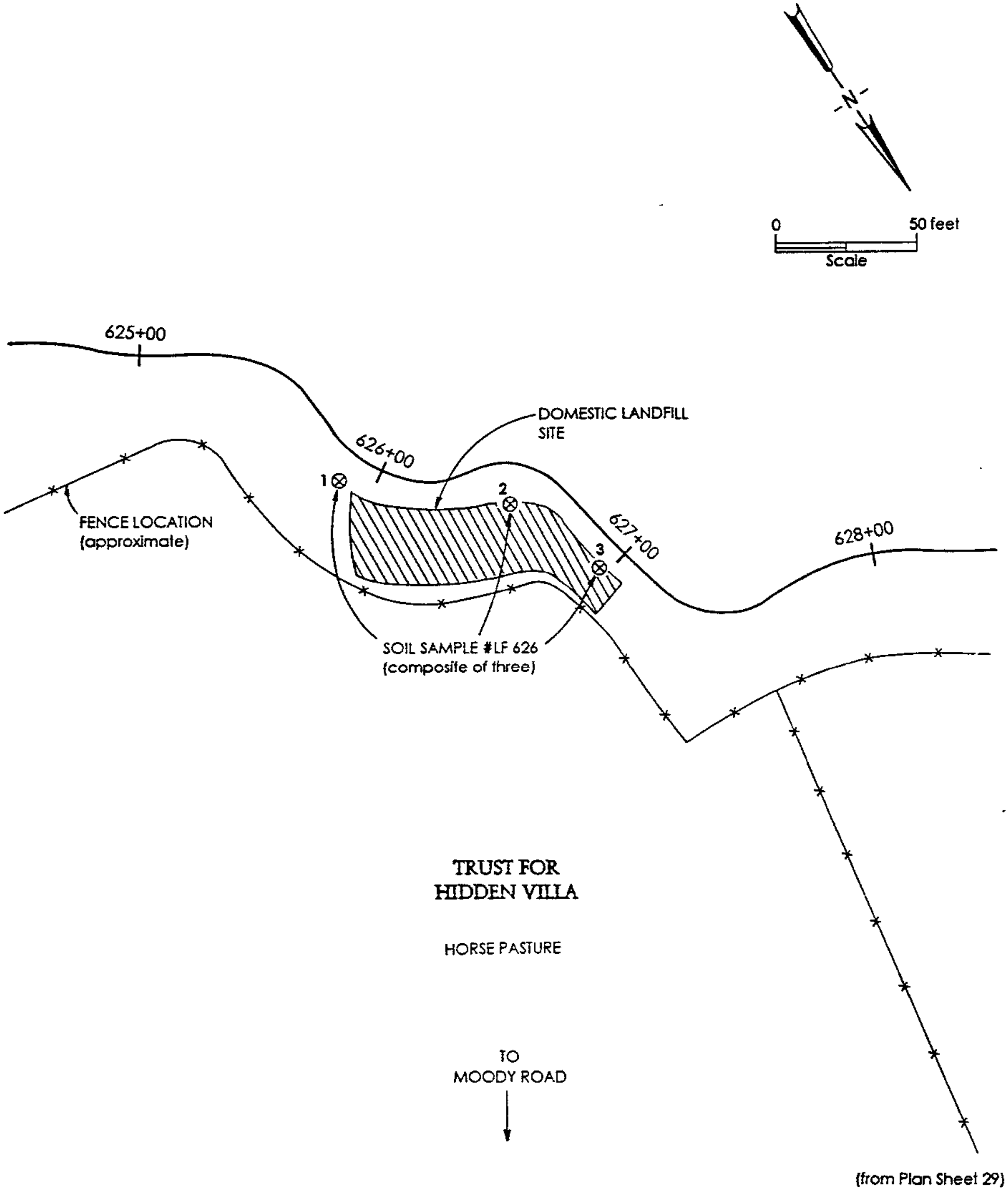
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

SAMPLING DETAIL - HIDDEN VILLA
STA. 613-615

FIGURE
13

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330



(from Plan Sheet 29)

TERRATECH

Jan. 1994

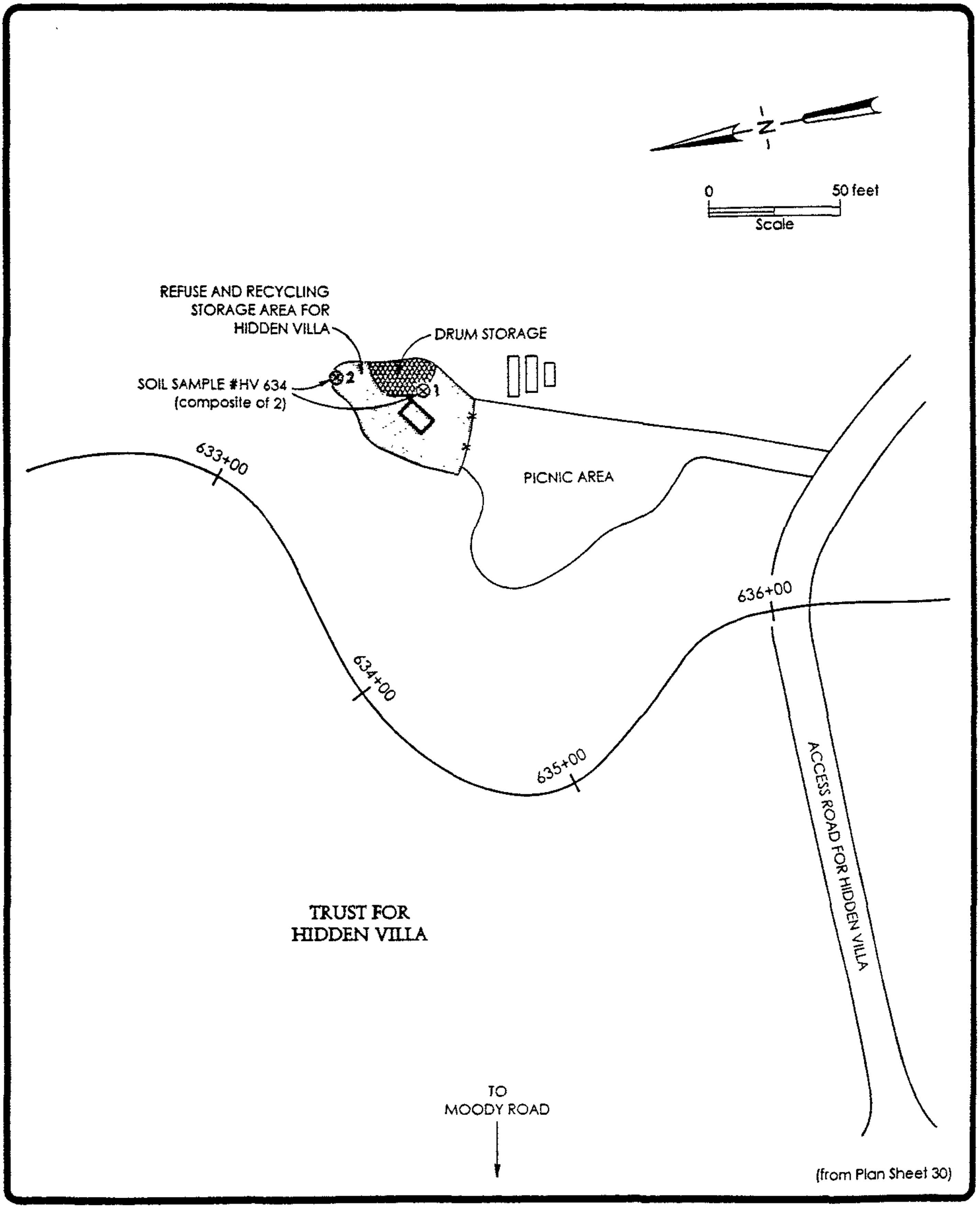
PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

SAMPLING DETAIL - HIDDEN VILLA
STA. 625-628

FIGURE
14

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330


N
0
50 feet
Scale
REFUSE AND RECYCLING STORAGE AREA FOR HIDDEN VILLA
DRUM STORAGE
SOIL SAMPLE #HV 634 (composite of 2)
2
1
633+00
634+00
635+00
636+00
PICNIC AREA
TRUST FOR HIDDEN VILLA
ACCESS ROAD FOR HIDDEN VILLA
TO MOODY ROAD

(from Plan Sheet 30)

Jan. 1994
TERRATECH

PHASE 1 HAZARDOUS MATERIALS ASSESSMENT
UPPER ADOBE CREEK
SANTA CLARA COUNTY, CALIFORNIA

SAMPLING DETAIL - HIDDEN VILLA
STA. 633-636

FIGURE
15

PROJECT
5499

SAN JOSE BLUEPRINT CO
PRINTED ON JR 330

PHOTO 1. Domestic well at Hau Residence on Edith Road; Station 397±.

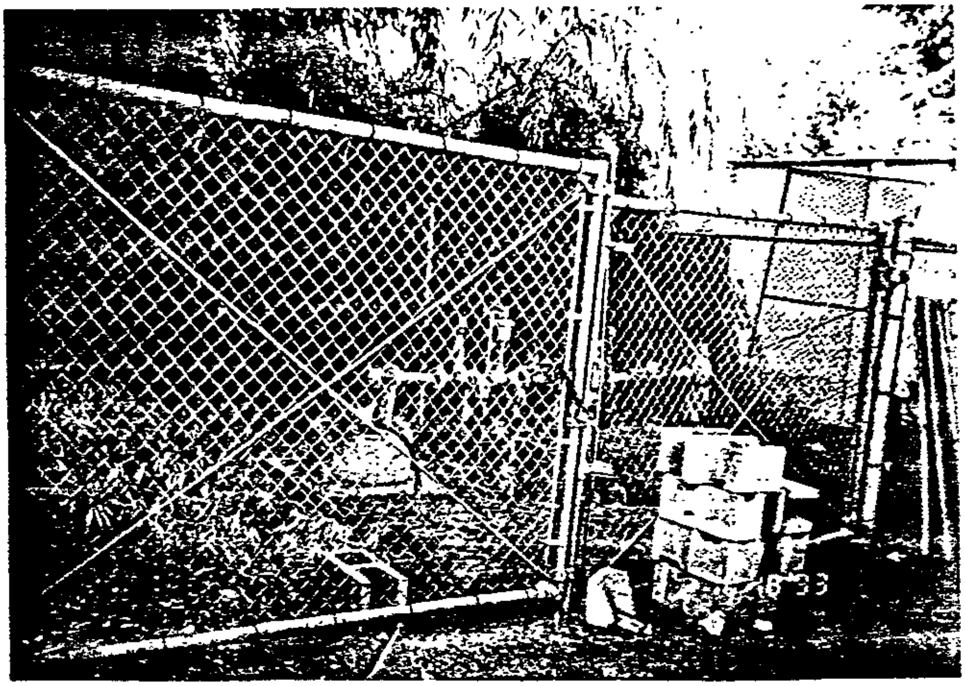


PHOTO 2. Caltrans well near Foothill College Maintenance Yard; Station 508±.

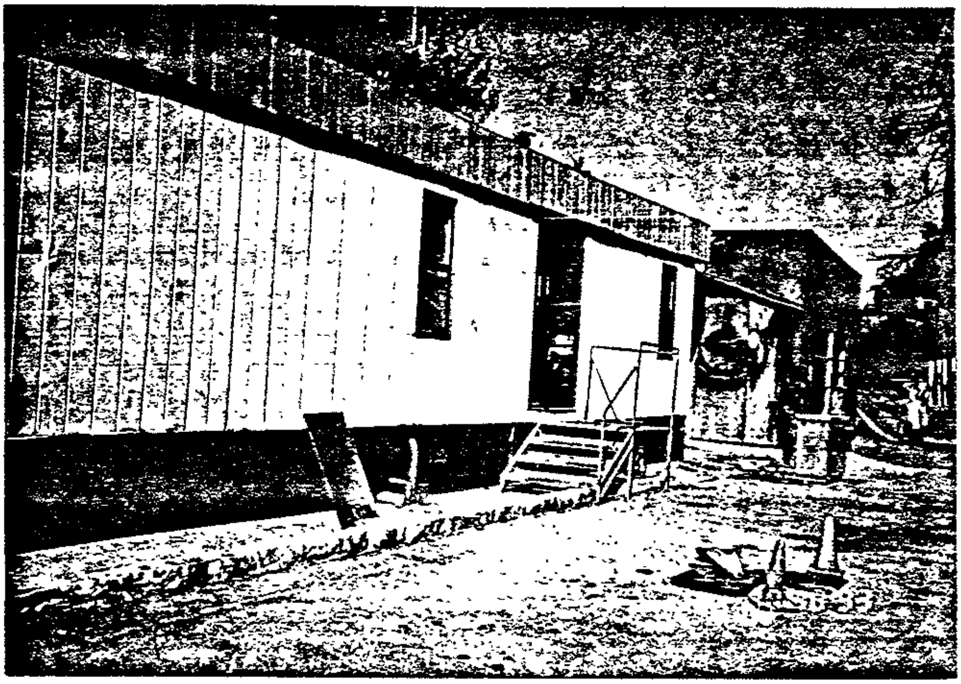


PHOTO 3 . Former paint shop location (burned down in 1990), spray booth in back, Adobe Creek to the left.

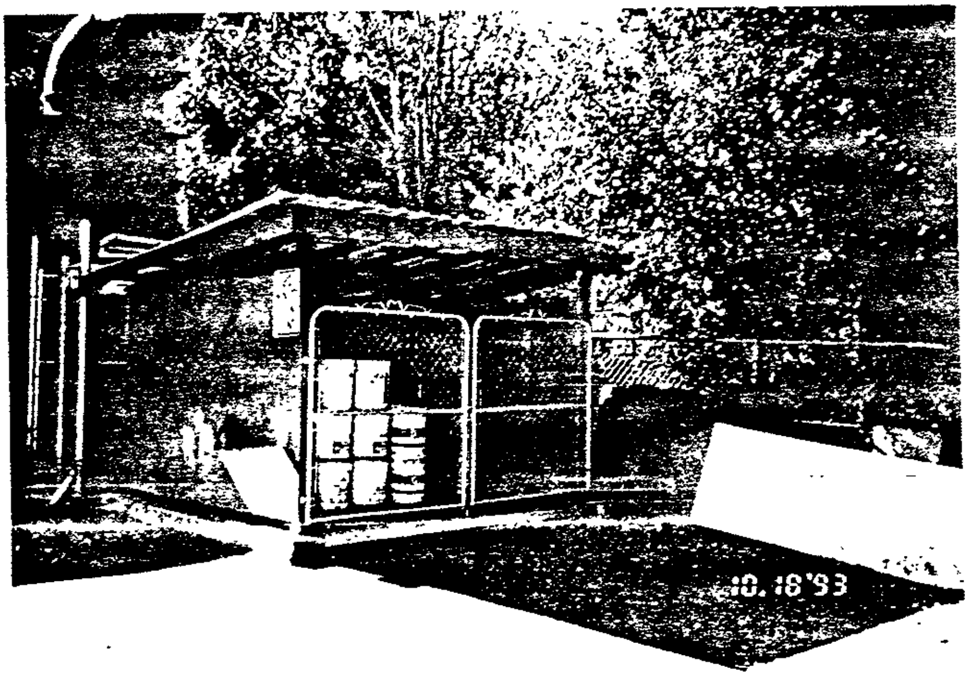


PHOTO 4 . Foothill College Maintenance Yard paint and fuel storage area.

PHOTO 5 . Domestic Landfill on the north bank of Adobe Creek; Station 626±.

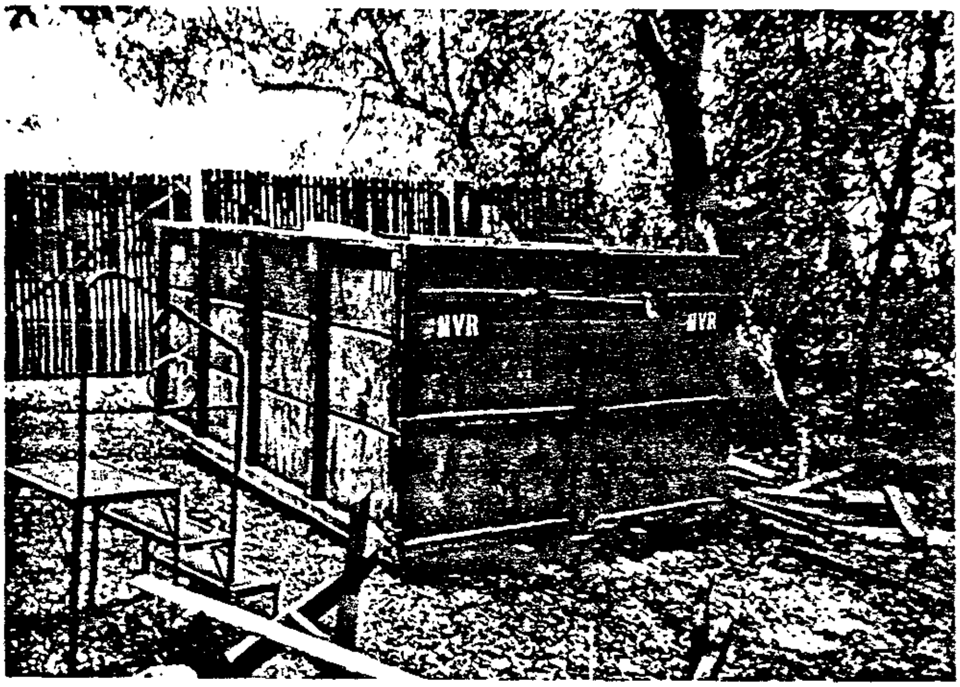


PHOTO 6. Hidden Villa waste storage area (Station 634±); Adobe Creek to right of dumpster.

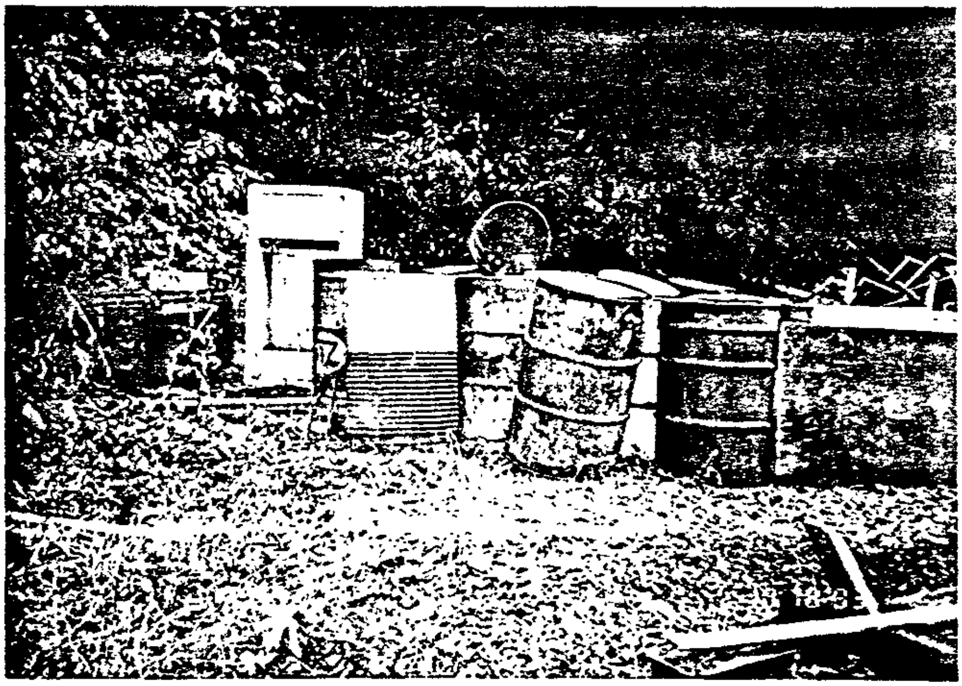


PHOTO 7. Stockpiled drums and debris at Hidden Villa Waste storage area; Adobe Creek to the left of photo.

APPENDIX A

VISTA California Radius Detailed Report on Regulatory Listed Sites

CLIENT NAME	**: TERRATECH INC-SAN JOSE**
ATTENTION	**: ERIC LAUTENBACH**
ADDRESS	**: 1365 VANDER WY**
CITY/STATE/ZIP	**: SAN JOSE, CA 95112**
REF/LOAN #	**: ADOBE CREEK**
VISTA REPORT NUMBER	**: 1/024848-001**
DATE OF REPORT	**: 9/01/1993**
SUBJECT PROPERTY	**: ADOBE CREEK**
CITY/COUNTY/STATE/ZIP	**: LOS ALTOS, SANTA CLARA, CA 94002**

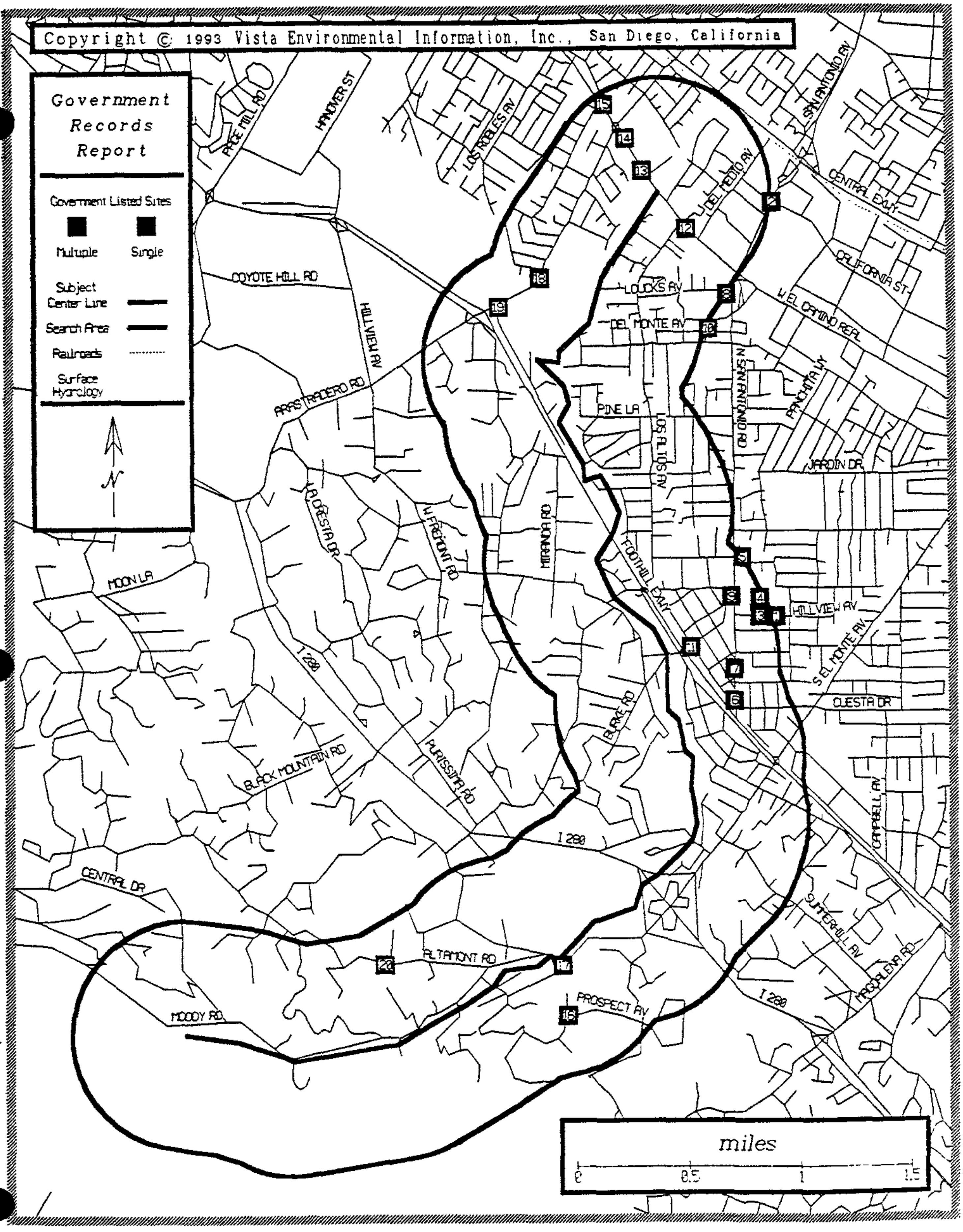
Dear Client:

In response to your recent order for services, we enclose your *Vista California Radius Detailed Report*. We hope you find the information helpful in your investigation. In the event you require additional information about any site identified in this report, please contact our *Customer Service Department* at (619) 450-6100.

Please remember that this report represents only a search of the specific government records listed in the table of contents. Vista is aware of additional government record sources that have not been included in this report and Vista makes no representations of adequacy for Client's purposes. Please be aware that government environmental records often have incomplete or inaccurate locations and that all reports reflect locations of street addresses and do not necessarily indicate the size or specific location of any site. In addition, please recognize that government agencies do not list all sites of environmental contamination. Therefore, this report should not be used as a substitute for a complete Phase I Assessment.

This report is intended only for the use and benefit of the Client, and their assigns, who shall be the only parties authorized to review this report. This report is provided pursuant to a subscription agreement with Vista Environmental Information, Inc., and is subject to all of the terms and conditions thereof, SPECIFICALLY INCLUDING, BUT NOT LIMITED TO, PROVISIONS REGARDING CLIENTS USE AND LIMITATIONS OF VISTA ENVIRONMENTAL INFORMATION, INC.'S LIABILITY. We appreciate your patronage.

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California


Copyright © 1993 Vista Environmental Information, Inc., San Diego, California
Government Records Report
Government Listed Sites
Multiple
Single
Subject Center Line
Search Area
Railroads
Surface Hydrology
N
miles
0
0.5
1
1.5
PAGE MILL RD
HANOVER ST
LOS ROBLES AV
SAN ANTONIO RD
DEL MEDIO AV
CENTRAL EXWY
CALIFORNIA ST
W EL CAMINO REAL
COYOTE HILL RD
LOUCKS AV
DEL MONTE AV
HILLVIEW AV
ARASTRADERO RD
N SAN ANTONIO RD
PINE LA
LOS ALTOS AV
PANCHITA WY
JARDIN DR
LA CRESTA DR
W FREMONT RD
MIRANDA RD
FOOTHILL EXWY
MOON LA
HILLVIEW AV
S EL MONTE AV
I 280
CUESTA DR
BURKE RD
BLACK MOUNTAIN RD
PURISSIMA RD
CAMPBELL AV
I 280
CENTRAL DR
SUMMERHILL AV
MAGDALENA RD
ALTAMONT RD
PROSPECT AV
I 280
MOODY RD
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

LIST OF RECORDS SEARCHED

This report represents a search of the following government database sources:

DATABASE		*TYPE OF RECORDS*	*AGENCY*
CERCLIS	:	Contaminated Sites Under CERCLA (1980)	U.S. EPA
NPL	:	Federal Superfund Sites	U.S. EPA
LIENS	:	Filed Notices of Superfund Liens	U.S. EPA
CORTESE	:	Hazardous Waste & Substances Site List	CAL-EPA
CAL-SITES/ AWP	:	Contaminated sites listed on the Annual Work Plan, and cleanup sites under the Bond Expenditure Plan	California EPA
BZP	:	Sites designated as Border Zone Properties (Deed Restrictions)	California EPA
CAL-SITES/ ASPIS	:	Actually or potentially contaminated sites under the Abandoned Site Program	California EPA
HWIS	:	Hazardous Waste Generators, Treatment, Storage & Disposal Facilities	California EPA
SWIS	:	Active & Inactive Sanitary Landfills and Disposal Facilities	California Waste Management Board
LUST	:	Leaking Underground Storage Tanks	California Regional Water Resources Control Boards

Due to the scale of the map, red and green squares on the map may represent more than one agency listing or location. For a detailed description of each source, please refer to the legends on the following pages.
For more information please call your VISTA account representative at (619) 450-6100.

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

CERCLIS

The information presented in this report is updated to March, 1993.

Since 1982, U.S. EPA has developed and maintained lists of contaminated properties under the federal Superfund program pursuant to the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), 42 U.S.C. Section 9601 (1985). U.S. EPA discovers these sites from citizen reports, routine inspection of hazardous waste generators, treatment, storage and disposal facilities, and reporting requirements.

MAP ID NO.	SITE NAME STREET ADDRESS, CITY and ZIP	EVENT* TYPES	EPA ID, REGIONAL UTILITY DESCRIPTION*
1	LOS ALTOS WELL FIELD COR OF HILL VIEW & ELEANOR LOS ALTOS 94022	DS1 HR1 PA1 SI1 SI2-N	CAD980884464 NEW ERRIS SITE
1	HILLVIEW - ELEANOR HILLVIEW - ELEANOR LOS ALTOS 94022	DS1 PA1-N	CAD982400053 NEW CERCLIS SITE
3	HILLVIEW MAINTENANCE YARD ADJ TO 97 HILLVIEW AVE, NRBY DRY CLE LOS ALTOS 94022	DS1 PA1	CAD982400202 NEW CERCLIS SITE
19	FAIRCHILD 4001 MIRANDA AVE PALO ALTO 94304	DS1 PA1-N	CAD009124256 NEW CERCLIS SITE SO BAY SITE IDENTIFIED BY RWQCB RCRA GEN TSD SOLVENTS: TCE TCA DCE O-XYLENE DICHLOROB HAZARD TARGET GROUND WATER: OBSERVED SOLVENTS: TCE DCE O-OYLENE DICHLOROB HAZARD TARGET GROUND WATER: OBSERVED SOIL CONTAMINATION

---

* See key on last page for definition

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

NATIONAL PRIORITY LIST (NPL)

The information presented in this report is updated to October, 1992.

U.S. EPA maintains this list under the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) 42 U.S.C. Section 9601 (1985). Once sites have been designated on the CERCLIS List, U.S. EPA uses its Hazard Ranking System (HRS) to determine potential risks to human health and the environment. Only those CERCLIS sites which present the greatest risk are added to the NPL, which qualifies the sites to receive CERCLA remedial funding.

MAP ID NO.	SITE NAME, STREET ADDRESS, CITY and ZIP	EPA ID, REGIONAL UTILITY DESCRIPTION*

As of the date listed above, no sites listed in this database are located within mapped search area.

---

* See key on last page for definition

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

FEDERAL SUPERFUND LIENS (LIENS)

The information presented in this report is updated to September, 1991.

Under Section 107(L) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) 42 U.S.C. Section 9607 (1), US EPA has authority to file liens against real property to recover clean up, response, and any other expenditure made by US EPA under the CERCLA program. US EPA has prepared a listing of filed notices of Superfund liens which is updated quarterly. Because these liens are "statutory liens," they arise when the agency spends money on a site or when notification of potential liability is received by the owner of the property. EPA maintains that these liens can arise without filing, however, and they suggest checking CERCLIS sites for lien status.

MAP ID NO.	SITE NAME	LOCATION	DATE FILED	RELEASE DATE

As of the date listed above, no sites listed in this database are located within mapped search area.

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

HAZARDOUS WASTE AND SUBSTANCES SITES LIST
CORTESE

The information presented in this report is updated to November, 1992.

The California Environmental Protection Agency (Cal-EPA) publishes a compilation of sites throughout the State of California. Under Government Code Section 65962.5, these sites are submitted to the Cal-EPA by the State Water Resources Control Board, the Integrated Waste Management Board, and the Department of Toxic Substances Control. The sites are extracted from the following databases:

A1025	Regulated Air Emissions at 10-25 tons/day.
AGT25	Regulated Air Emissions greater than 25 tons/day.
ASPIS	Abandoned Sites Program Information System (included in CALSITES)
DTSCD	Department of Toxic Substance Control Docket
FINDS	Facility Index System
HWIS	Hazardous Waste Information System
IUR	Inventory Update Rule (Chemical Manufacturers)
LTANK	Leaking Tank
S1987 - S1990	California TRIS
SWRCB	State Water Resources Control Board
UTANK	Underground Tank
WB-LF	Waste Board - Leaking Facility (site has known migration)
WDSE	Waste Discharge System - Enforcement Action

MAP ID NO.	SITE	LOCATION	CITY	ZIP	DATABASE	AGENCY ID
2	SHELL	2595 CALIFORNIA	MOUNTAIN VIEW	94040	LTANK	N/A
2	TEXACO	334 SAN ANTONIO	MOUNTAIN VIEW	94043	LTANK	N/A
2	CALIFORNIA/SN ANTONIO	2595 CALIFORNIA	MOUNTAIN VIEW	94040	UTANK	28578
2	TEXACO	334 SAN ANTONIO	MOUNTAIN VIEW	94043	UTANK	5781
2	SHELL STATION #204-5208-0409	2595 CALIFORNIA	MOUNTAIN VIEW	94040	HWIS	CAD981401607
6	CHEVRON	470 SAN ANTONIO RD	PALO ALTO	94306	LTANK	N/A
6	CHEVRON STATION #95215	470 SAN ANTONIO RD	PALO ALTO	94306	HWIS	CAL000029747
7	UNOCAL	330 SAN ANTONIO RD S.	LOS ALTOS	94022	LTANK	N/A
7	UNION OIL SS #5957	330 SAN ANTONIO RD S.	LOS ALTOS	94022	UTANK	30774
7	UNOCAL SVC STA #5957	330 SAN ANTONIO RD S.	LOS ALTOS	94022	HWIS	CAD982057881
7	LOS ALTOS UNION SERVICE	330 SAN ANTONIO RD S.	LOS ALTOS	94022	HWIS	CAL000033268
8	ARCO	988 SAN ANTONIO BLVD	LOS ALTOS	94402	LTANK	N/A

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

MAP ID NO.	SITE	LOCATION	CITY	ZIP	DATABASE	AGENCY ID
8	LAWRENCE J FRUGOLI JR	988 SAN ANTONIO BLVD	LOS ALTOS	94402	UTANK	26956
8	ARCO PRODUCTS CO FAC 707	988 SAN ANTONIO BLVD	LOS ALTOS	94402	HWIS	CAL000028362
8	A R C O #207	988 SAN ANTONIO BLVD	LOS ALTOS	94402	HWIS	CAX000238089
11	CHEVRON	401 MAIN ST	LOS ALTOS	N/A	LTANK	N/A
11	CHEVRON STATION #91875	401 MAIN ST	LOS ALTOS	N/A	HWIS	CAL000029729
12	UNOCAL	4350 EL CAMINO REAL	LOS ALTOS	94022	LTANK	N/A
12	UNION OIL SS #6115	4350 EL CAMINO REAL	LOS ALTOS	94022	UTANK	21125
12	UNOCAL SVC STA #6115	4350 EL CAMINO REAL	LOS ALTOS	94022	HWIS	CAD982059628
13	PADDLESFORD OLDSMOBILE	4230 EL CAMINO REAL	PALO ALTO	N/A	LTANK	N/A
13	HUDSON #82	4230 EL CAMINO REAL	PALO ALTO	N/A	UTANK	60133
16	CYMROT PROPERTY	12120 EDGECLIFF PL	LOS ALTOS HILLS	N/A	LTANK	N/A
17	FOOTHILL-DEANZA COMM COLL DIST	12345 EL MONTE RD	LOS ALTOS HILLS	96022	LTANK	N/A
17	EL MONTE FIRE STATION	12345 EL MONTE RD	LOS ALTOS HILLS	96022	UTANK	11873
17	FOOTHILL COLLEGE	12345 EL MONTE RD	LOS ALTOS HILLS	96022	UTANK	6277
17	FOOTHILL DE ANZA COMM COLLEGE	12345 EL MONTE RD	LOS ALTOS HILLS	96022	FINDS	CAD981451651
17	FOOTHILL COLLEGE	12345 EL MONTE RD	LOS ALTOS HILLS	96022	FINDS	CAD981642622
17	FOOTHILL COLLEGE	12345 EL MONTE RD	LOS ALTOS HILLS	96022	HWIS	CAD981642622
17	FOOTHILL COLLEGE	12345 EL MONTE RD	LOS ALTOS HILLS	96022	HWIS	CAL000061626
17	FOOTHILL-DE ANZA COMMUNITY COL	12345 EL MONTE RD	LOS ALTOS HILLS	96022	HWIS	CAX000070540
18	ALTA MESA IMPROVEMENT COMPANY	695 ARASTRADERO RD	PALO ALTO	94306	LTANK	N/A
18	ALTA MESA MEMORIAL PARK	695 ARASTRADERO RD	PALO ALTO	94306	UTANK	18070

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

CAL-SITES (AWP)

The information presented in this report is updated to March, 1993.

The Annual Work Plan (AWP) contains a listing of all verified hazardous waste sites that are or will be targeted for abatement by the California Environmental Protection Agency under the Hazardous Substance Cleanup Bond Act of 1984 (Health and Safety Code Section 25356) and the Hazardous Substance Account (HSA). Hazardous waste sites may be discovered by the department directly or referred to the department for confirmation and follow up action by another government agency, such as a local health department, a Regional Water Quality Control Board, a responsible party or a concerned citizen. New sites are added to this database as they are verified and the "Preliminary Assessment, Site Investigation and Hazard Ranking System" processes are completed. This database is updated once annually after approval of the California state legislature and has been incorporated into the CAL-SITES database.

This database currently contains a list of approximately 250 sites in the State of California.

MAP ID NO	SITE NAME	STREET ADDRESS	CITY	ZIP	SITE INFORMATION*
4	HILLVIEW - ELEANOR AREA PLUME	BTW HILLVIEW;ELEANOR AVE&SAN ANTONIO	LOS ALTOS	94022	See following page(s).

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

BORDER ZONE PROPERTY ACT SITES
(DEED RESTRICTIONS)

The information provided in this report is updated to September, 1992.

In accordance with Assembly Bill 816, and the Hazardous Waste Property/Border Zone Property Law (Health & Safety Code 25220), the CAL-EPA, Toxic Substances Control Program (TSCP) enters into voluntary deed restriction agreements with owners of property who propose building residences, schools, hopitals or day care centers on property that is "on or within 2,000 feet of a significant disposal of hazardous waste". Restrictions may include "activities on, over, or under the land, including, but not limited to, a prohibition against building, filling, grading, excavating, or mining" without the written permission of the TSCP.

This bill requires the TSCP to "notify the planning and building department of each city, county, or regional council of governments when a land use restriction has been recorded, and would require the planning and building department to enforce the restriction," although the TSCP has compiled a list of properties subject to environmental deed restrictions which is used to notify various building and planning departments in local jurisdictions.

MAP ID NO.	SITE NAME	ADDRESS	CITY	ZIP

As of the date listed above, no sites listed in this database are located within mapped search area.

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

CAL-SITES (ASPIS)

The information presented in this report is updated to September, 1992.

Developed under Section 25359.6 of the Health and Safety Code, the California EPA Toxic Substance Control Program (TSCP) maintains a listing of potential and known hazardous waste sites. TSCP staff have interviewed officials from county health agencies, local fire departments, county agricultural commissioners, and other local agencies that could reasonably be expected to have information regarding potential waste sites. The Regional Water Quality Control Boards, Department of Fish and Game and other state environmental regulatory agencies' TSCP staffs also review historical land use data sources to generate lists of potentially contaminated sites.

This database was formerly known as the Abandoned Site Program Information System, but was integrated into the CAL-SITES database in 1991. Information concerning most of these sites should be considered preliminary although most confirmed sites from this database are merged into the AWP once they have been hazard ranked. This database currently contains more than 26,000 sites in the State of California.

MAP ID NO.	FACILITY NAME	LOCATION	CITY	ZIP	FACILITY NO.	STATUS CODE*
3	HILLVIEW MAINTENANCE YARD	94 HILLVIEW AVENUE	LOS ALTOS	94022	43750004	EPA
4	HILLVIEW - ELEANOR AREA PLUME	BTW HILLVIEW;ELEANOR AVE&SAN ANTONIO	LOS ALTOS	94022	43490059	AWP

* See "Key to Terms" on last page of report for definition

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

HAZARDOUS WASTE INFORMATION SYSTEMS (HWIS)

The information presented in this report is updated to September, 1992.

The California Department of Health Services, Toxic Substances Control Division, has developed and maintained lists of hazardous waste generators and hazardous waste treatment storage and disposal facilities in the State of California, pursuant to the Hazardous Waste Control Law (Health and Safety Code Section 25100 et seq.), and the Hazardous Waste Management Act of 1976 (Health and Safety Code Section 25179.1 et seq). In addition, this law requires all counties to prepare and submit hazardous waste management plans. To assist the counties,the Toxic Substances Control Division maintains lists containing generation and disposal data within each county. This information has been assembled by the Toxic Substances Control Division from manifest reports required from hazardous waste generators. This database currently lists over 20,000 sites in the state of California.

MAP ID NO.	EPA NO.	FACILITY NAME	ADDRESS	CITY	GEN/TSD*
2	CAL000028837	EXXON COMPANY USA #70230	334 SAN ANTONIO	MOUNTAIN VIEW	GEN
6	CAL000029747	CHEVRON STATION #95215	470 SO SAN ANTONIO	LOS ALTOS	GEN
8	CAL000028362	ARCO PRODUCTS CO FAC 707	988 SAN ANTONIO RD	LOS ALTOS	GEN
11	CAL000029729	CHEVRON STATION #91875	401 MAIN ST	LOS ALTOS	GEN
12	CAD982059628	UNOCAL SVC STA #6115	4350 EL CAMINO REAL	LOS ALTOS	GEN
15	CAD098534381	CARLSEN SUBARU	4190 EL CAMINO	PALO ALTO	GEN
17	CAD981642622	FOOTHILL COLLEGE	12345 EL MONTE RD	LOS ALTOS HILLS	GEN

---

* See "Key to Terms" on last page of report for definition

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

SOLID WASTE INFORMATION SYSTEM (SWIS)

The information presented in this report is updated to March, 1993.

The California Integrated Waste Management Board maintains an inventory list of both open as well as closed and inactive solid waste disposal facilities and transfer stations pursuant to the Solid Waste Management and Resource Recovery Act of 1972, Government Code Section 2. 66790(b). Generally, the California Integrated Waste Management Board learns of locations of disposal facilities through permit applications and from local enforcement agencies. Since 1977, the SWIS system has grown to track over 1000 solid waste disposal facilities and transfer stations in the State of California.

MAP ID NO.	SWIS ID	FACILITY NAME	ADDRESS	CITY	OPERATIONAL STATUS	WASTE RECEIVED*	TONS/DAY

As of the date listed above, no sites listed in this database are located within mapped search area.

---

* See "Key to Terms" on last page of report for definition

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

LEAKING UNDERGROUND STORAGE TANKS (LUST)

The information presented in this report is updated to:

Region 1 - June 1993: North Coast
Region 2 - May 1993: San Francisco Bay Area
Region 3 - June 1993: Central Coast
Region 4 - January 1993: Greater Los Angeles Area
Region 5 - March 1993: Central Valley
Region 6 - November 1992: Lahontan Area
Region 7 - April 1993: Colorado River Basin
Region 8 - April 1993: Santa Ana Area
Region 9 - June 1993: Greater San Diego Area

The California State Water Resources Control Board, in cooperation with the Office of Emergency Services, compiles lists of all leaks of hazardous substances from underground storage tanks in the State of California pursuant to Section 25295 (b) of the Health and Safety Code. The nine regional boards maintain information on all reported leak cases within their jurisdiction, both for those where the regional board and where other local agencies take the lead in overseeing investigations and remedial actions. The California Environmental Protection Agency's Department of Hazardous Materials Data Management collects the nine regional lists and publishes them as one database named LUSTIS.

Status codes for some regions are not available directly from the nine boards. For those regions VISTA supplements the region's status codes with state LUSTIS status codes. Information from LUSTIS is placed in parentheses and has been updated to May, 1993.

MAP ID NO.	FACILITY	STREET	CITY	ZIP	SUBSTANCE*	GALLONS LOST	CASE* TYPE	STATUS*	REMEDIAL* ACTION CODE
2	SHELL	2595 CALIFORNIA ST	MOUNTAIN VIEW	N/A	(8006619)		(G)	(5R)	(NT)
2	TEXACO	334 SAN ANTONIO RD	MOUNTAIN VIEW	N/A	(8006619)		(G)	(5C)	(NT)
2	VICTOR'S GOODYEAR	298 SAN ANTONIO DR	MOUNTAIN VIEW	N/A	(12035)		(S)	(9)	(ED)
5	VILLA ANGELA PROPERTY	11 ANGELA DR	LOS ALTOS	N/A	(8008206)		(S)	(9)	(NT)
6	CHEVRON	470 SAN ANTONIO RD S	LOS ALTOS	N/A	(8006619)		(S)	(3B)	(NT)
7	UNOCAL	330 SAN ANTONIO RD S	LOS ALTOS	N/A	(12031)		(G)	(5C)	(ED)
8	ARCO	988 SAN ANTONIO RD N	LOS ALTOS	N/A	(12036)		(G)	(5R)	(VSEDVEGT FP)
9	CHEVRON	45 MAIN ST	LOS ALTOS	N/A	(8006619)		(S)	(9)	(ET)
10	N/A	67 DEL MONTE	LOS ALTOS	N/A	(12034)		(S)	(0)	(NT)
11	CHEVRON	401 MAIN ST	LOS ALTOS	N/A	(8006619)		(S)	(3A)	(NT)

* See "Key to Terms" on last page of report for definition

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

LUST continued...

MAP ID NO.	FACILITY	STREET	CITY	ZIP	SUBSTANCE	GALLONS LOST	CASE TYPE*	STATUS*	REMEDIAL ACTION CODE*
12	UNOCAL	4350 EL CAMINO REAL	LOS ALTOS	N/A	(8006619)		(G)	(5C)	(NT)
13	PADDLESFORD OLDSMOBILE	4230 EL CAMINO REAL	PALO ALTO	N/A	(8006119)		(S)	(0)	(NT)
14	N/A	4201 EL CAMINO REAL	PALO ALTO	N/A	(8006619)		(G)	(3B)	(NT)
16	CYMROT PROPERTY	12120 EDGECLIFF PL	LOS ALTOS HILLS	N/A	(8006619)		(S)	(0)	(NT)
17	FOOTHILL-DEANZA COMM COLL DIST	12345 EL MONTE RD	LOS ALTOS HILLS	N/A	(78)		(S)	(0)	(ED)
18	ALTA MESA IMPROVEMENT COMPANY	695 ARASTRADERO RD	PALO ALTO	N/A	(8006619)		(S)	(0)	(NT)
20	FERRARI PROPERTY	25800 ALTAMONT RD	LOS ALTOS HILLS	N/A	(12034)		(S)	(9)	(NT)

* See "Key to Terms" on last page of report for definition

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

KEY TO TERMS/ABBREVIATIONS USED IN THIS REPORT:

N/A: An entry having "N/A" in a field indicates no information is available at this time.

CERCLIS:

* *EVENT TYPE* - Evaluation and disposition information:

AR = Administrative Record
AS = Aerial Survey
CO = Combined RI/SI
CR = Remedial Community Relations
CT = Community Relations Technical Assistance
DA = Design Assistance
DS = Discovery
ED = Endangerment Assessment
EO = EDD
ER = Expedited Response Action
ES = Expanded Site Inspection
EV = Evacuation State/Local
FM = Forward Planning/Management Assistance
FP = Forward Planning Activity (for Historical Purposes only)
FS = Feasibility Study (Primarily for Historical Purposes)
GS = Geophysical Support/Mapping
HA = Health Assessment
HR = Final Hazard Ranking Determined
IM = Initial Remedial Measure
IR = Immediate Removal
LA = Long-Term Response
LR = Long-Term Response
MA = Management Assistance
NA = NAA
ND = NPL Deletion Process
NF = Final Listing on NPL
NP = Proposal to NPL
NR = Removed from Proposed NPL
OH = Other Event
OM = Operations and Maintenance
OS = Oversight of State by Fund
PA = Preliminary Assessment
PD = Public Comments on Deletion Package
PR = Planned Removal
RA = Remedial Action
RC = Removal Community Relations
RD = Remedial Design
RI = Remedial Investigation (Primarily for Historical Purposes)
RM = RAMP -- Remedial Action Master Plan (for Historical Purposes only)
RO = ROD
RS = Removal Investigation
RV = Removal Action
SE = Site Access
SI = Site Inspection
TA = Technical Assistance
TG = Community Relations Technical Assistance
TO = Topographical Mapping
TR = Temporary Relocation
UR = Underground Storage Tank Removal
WP = RI/FS Workplan Approved by HQ
Z_ = (For Internal Office Use only)

* *EVENT QUALIFIER* - Actual or anticipated actions and priorities:

C = Clean up.
D = Deferred.
E = Administrative record compilation / remedial event.
G = Recommended for HRS scoring.
H = Higher priority.
L = Lower priority.
M = Medium priority.
N = No further remedial action planned.
S = Stabilization.
U = Unknown.
V = Administrative record compilation / removal event.

* *REGIONAL UTILITY DESCRIPTION* - Provides information developed by U.S. EPA's regional office about the nature of contamination at a specific site.

NPL:

* *SITE DESCRIPTION* - Provides a brief explanation of the contaminants and circumstances of a particular site.

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

AWP (FORMERLY BEP):

* *SITE INFORMATION* - Provides a brief description of the hazardous wastes on the site, the potential threat to public health and the status of the site.

CAL-SITES (FORMERLY ASPIS):

* *STATUS CODE* - Indicates the current status of a site and whether it is scheduled for further investigation by DHS Toxic Substances Control Division.

"AWP"	"Annual Workplan" - in remediation.
"BKLG"	"Backlog" - potential AWP site which has been hazard ranked but which is not on the annual workplan.
"CERT"	"Certified" - has been remediated.
"CNTY"	"County lead site" - not a candidate for the annual workplan and the local county has the lead.
"COM"	"Certified Operation and Maintenance" - has been certified but is still in operation and maintenance.
"DLIST"	"Delisted" - taken off the AWP usually for administrative reasons, for example: if several sites are consolidated, the old sites could be given this status.
"EPA"	"EPA lead" - not on the NPL, yet EPA has assumed the lead.
"HRR"	"Hazard Ranking Required" - has had a Preliminary Endangerment Assessment or equivalent evaluation and needs to be hazard ranked.
"NFA"	"No Further Action" - based on the information available on the site's potential to threaten public health and/or the environment, DTSC staff have judged this site to require no further departmental action.
"OAL"	"Other Agency Lead" - not on the AWP and has a lead agency other than the county, the RWQCB, EPA, or RCRA.
"PEARH"	"Preliminary Endangerment Assessment Required, High priority" - judged by DTSC staff to have a high probability of posing a public health or environmental threat.
"PEARL"	"Preliminary Endangerment Assessment Required, Low priority".
"PEARM"	"Preliminary Endangerment Assessment Required, Medium priority".
"PRP"	"Potential Responsible Party search required" - not on the AWP but needs a PRP search, after which would normally receive a ranking of AWP or BKLG.
"RCRA"	"Resource Conservation and Recovery Act" lead - is being mitigated under the Permitting Program and has never been on the AWP or BEP.
"REFRC"	"Referred to RCRA" - has been on the AWP or BEP in the past and is being mitigated under the lead of the permitting program.
"REFRW"	"Referred to RWRQCB" - formerly on the AWP or BEP and is now being mitigated under the lead of the Regional Water Quality Control Board.
"RWQCB"	"Referred to RWQCB" - has never been on the AWP or BEP; is being mitigated under the lead of the RWQCB.
"SSR"	Site Screen Required. The site requires initial screening.

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

HWIS:

* GEN/TSD - Indicates whether the listed facility is a generator of hazardous *waste or is a treatment, storage or disposal facility.*

LUST:

* SUBSTANCE CODES

MOTOR OIL = 08
BOILER FUEL = 09
#6 FUEL OIL = 10
HEATER FUEL = 12
SOLVENTS = 13
HYDRAULIC OIL = 14
WASTE WATER = 32
MINERAL SPIRITS = 41
PAINT THINNER = 49
OIL\GREASE WASTE = 51
DRY CLEANING SOLVENT = 52
WATER\WASTE OIL MIX = 61
LUBRICATING OIL = 71
HYDROCARBONS = 76
COOLANT = 77
ALIPHATIC HYDROCARBONS = 78
TRANSMISSION FLUID = 80
LACQUER THINNER = 84
NAPTHA DISTILLATE = 101
V,M&P NAPTHA = 116
CUTTING OIL = 122
#5 FUEL OIL = 127
CHLORINATED HYDROCARBONS = 142
FREON = 171
ALCOHOL = 172
UNLEADED GASOLINE = 12031
REGULAR GASOLINE = 12032
PREMIUM GASOLINE = 12033
DIESEL = 12034
WASTE OIL = 12035
MISC. VEHICLE FUEL = 12036
JET FUEL = 12037
CYANIDES, SALTS = 57125
ETHYL ALCOLHOL = 64175
ACETIC ACID = 64197
METHYL ALCOLHOL = 67561
ISOPROPYL ALCOHOL = 67630
ACETONE = 67641
BENZENE = 71432
METHYLENE CHLORIDE = 75092
METHYL ETHYL KETONES = 78933
TCE = 79016
PSEUDODOCUMENE = 95636
XYLENE = 106423
ETHYLENE DICHLORIDE = 107062
TOLUENE = 108883
TETRAHYDROFURAN = 109999
PERCHLORETHYLENE = 127184
DINITROTOLUENES = 610399
NICKEL OXIDE = 1313991
PCB = 1336363
LEAD = 7439921
NICKEL = 7440020
CHROMIUM = 7440473
COPPER = 7440508
CRUDE OIL (HAZ.) = 8002059
GASOLINE = 8006619
COAL TAR = 8007452
KEROSENE = 8008206
STODDARD SOLVENTS = 8052413
ASPHALT = 8052424
POLYESTER RESIN = 25037665

* CASE TYPE CODES

D - One or more domestic or municipal supply wells have been contaminated.
G - Ground water has been affected.
S - Only soil has been affected.
U - The type of resources affected or extent of the resources affected are not known.

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

* STATUS CODES

C	Remedial action (cleanup) in progress.
0	No Action No action has been taken by the responsible party after the initial report of the leak.
1	Leak Being Confirmed A leak is suspected at a site, includes inspection of the excavation, and tank and appurtenant plumbing to determine existence of leak.
3A	Preliminary Site Assessment Workplan Submitted A workplan\proposal has been requested of, or submitted by, the responsible party in order to determine whether groundwater has been, or will be, impacted as a result of a release from any underground tanks or associated piping.
3B	Preliminary Site Assessment Underway Implementation of a workplan addressing the above described tasks.
5C	Pollution Characterization Responsible party is in the process of installing additional monitoring wells and\or borings in order to fully define the lateral and vertical extent of contamination in soil and ground water and assess the Hydrogeology of the area. This phase of work may also include performing aquifer tests, soil gas surveys, continued ground water gradient determinations and monitoring, assessing impacts of surface and\or ground water.
5R	Remediation plan A remediation plan has been submitted evaluating long term remediation options. A proposal and implementation schedule for an appropriate remediation option has also been submitted. This phase of work may also include preparing and submitting the necessary information for any permits needed prior to implementation of the plan (NPDES or WDR).
7	Remedial Action Implementation of corrective action plan.
8	Post Remedial Action Monitoring Periodic ground water or other monitoring at the site, as necessary, in order to verify and/or evalutate the effectiveness of remedial activities.
9	Case Closed The Regional Board and the Local Agency are in concurrence that no further work is necessary at the site. (9L: Closed by county. 9R: Closed by RWQCB.)
10	Cease and Abate Order

* REMEDIAL ACTION CODES

CB	Containment Barrier -- install vertical dike to block horizontal movement of contaminant.
CD	Cap Site -- install horizontal impermeable layer to reduce rainfall infiltration.
ED	Excavate and Dispose -- remove contaminated soil and dispose in approved site.
ET	Excavate and Treat -- remove contaminated soil and treat (includes spreading or land farming).
FP	Remove Free Product -- remove floating product from water table.
GT	Pump and Treat Ground Water -- generally employed to remove dissolved contaminants.
HU	Treatment at Hookup -- install water treatment devices at each dwelling or other place of use.
IT	Enhanced Biodegradation -- use of any available technology to promote bacterial decomposition of contaminants.
NA	No Action Required -- incident is minor, requiring no remedial action.
NT	No Action Taken -- no indication that action was taken.
OT	Other
RS	Replace Supply -- provide alternative water supply to affected parties.
UK	Unknown -- *action not known, or unknown if action taken.*
VE	Vapor Extraction
VS,VT	Vent Soil -- bore holes in soil to allow volatilization of contaminants.

COUNTY:

Class I	Hazardous Materials Accepted (No Radioactivity)		
Class II	Mixed Municipal rubbish		
Class III	Solid waste (concrete)	Type DB	Debris Basin
Class LV	Large Volume transfer station	Type LF	Landfill
Class SV	Small Volume transfer station	Type TS	Transfer Station

NOTE: ALL DESIGNATIONS ARE SUBJECT TO CHANGE.

Copyright © 1993 by VISTA Environmental Information, Inc., San Diego, California

Agency	City	Zip	St #	Street Name	Site Name	NF
CERCLIS	MOUNTAIN VIEW	94042		MOUNTAIN VIEW	SAN FRANCISCO BAY	NO
CERCLIS	MOUNTAIN VIEW	00000		MOUNTAIN VIEW	MOUNTAIN VIEW #5	NO
CERCLIS	MOUNTAIN VIEW	94043		PLYMOUTH & COLONY STS	CTS PRINTEX	NO
CERCLIS	SAN JOSE	95138		STN 635 & STN 706	UNITED TECHNOLOGIES	NO
CERCLIS	SAN JOSE	95110		SW COR SAN AUGUSTINE & MONTG-Y	PG&E GAS PLANT SAN JOSE 408 5	NO
CERCLIS	PALO ALTO	94304		APPROX 215 YARDS NW OF OLD PAGE MILL	OLD QUARRY DISPOSAL SITE, STANDFORD	Y
CERCLIS	PALO ALTO	94303	601	CALIFORNIA AVE	VARIAN ASSOCIATES	Y
CERCLIS	SAN JOSE	95050		LOS ESTERRAS	OWENS CORNING FIBERGLAS CORP	Y
CORTESE	LOS ALTOS	94022		BTW HILLVIEW ELEANOR AVE&SAN A	HILLVIEW - ELEANOR AREA PLUME	-
CORTESE	MENLO PARK	94025		EL CAMINO & RAVENWOOD	PENINSULA REGENT	-
CORTESE	MENLO PARK	94025		EL CAMINO & RAVENWOOD	SEQUOIA STATION DEVELOPMENT	-
CORTESE	MENLO PARK	94025		EL CAMINO & RAVENWOOD	GREEK ORTHODOX MEMORIAL PARK	-
CORTESE	MENLO PARK	94025	3750	HAVEN AVE	CARL OLSON AND SONS	-
CORTESE	MENLO PARK	94025	3750	HAVEN AVE	CARL OLSON AND SONS	-
CORTESE	MENLO PARK	94025	125	SHARON PARK	SHELL STATION #204-4868-0900	-
CORTESE	MENLO PARK	94025	125	SHARON PARK	SHELL	-
CORTESE	MENLO PARK	94025	125	SHARON PARK	SHARON HEIGHTS SHELL	-
CORTESE	MOUNTAIN VIEW	94089		MOFFET ROAD	MOFFET FIELD NAS/STATION WIDE	-
CORTESE	MOUNTAIN VIEW	00000		SAN ANTONIO CIR	MT. VIEW SHORELINE REGIONAL PA	-
CORTESE	MOUNTAIN VIEW	00000		SAN ANTONIO CIR	FAST MART	-
CORTESE	MOUNTAIN VIEW	00000		SAN ANTONIO CIR	JC PENNEY	-
CORTESE	MOUNTAIN VIEW	00000		SAN ANTONIO CIR	SAN ANTONE FOREST FIRE STATION	-
CORTESE	PALO ALTO	94306	985	CHURCHILL AVE	PALO ALTO UNIFIED SCHOOL DIST	
CORTESE	PALO ALTO	00000		DPS	STANFORD	-
CORTESE	PALO ALTO	00000		FLEET SERVICE STATIO	STANFORD UNIVERSITY	-
CORTESE	PALO ALTO	00000		GINZTON LAB	STANFORD	-
CORTESE	PALO ALTO	00000		GOLF COURSE	STANFORD ATHLETIC DEPARTMENT	-
CORTESE	PALO ALTO	00000		HIGH TECH GAS LAB	STANFORD	-
CORTESE	PALO ALTO	00000	2479	HILLER AVE	PECK & HILLER	-
CORTESE	PALO ALTO	00000		KNOLL	STANFORD	-
CORTESE	PALO ALTO	00000		MECHANICAL ENG BLDG	STANFORD	-
CORTESE	PALO ALTO	00000		OLD STEAM PLANT	STANFORD	-
CORTESE	PALO ALTO	00000		PALOU ST	STANFORD UNIVERSITY	-
CORTESE	SAN JOSE	00000	302	51ST ST	ORIGINAL JOES	-
CORTESE	SAN JOSE	95101		ALMADEN ROAD	ALMADEN QUICKSILVER COUNTY PAR	-
CORTESE	SAN JOSE	00000	33	ALUM ROCK	FAST MART	-
CORTESE	SAN JOSE	94520	1598	ALUM ROCK E.	ULTRAMAR (JET GAS)	-
CORTESE	SAN JOSE	00000	850	BRENNAN ST	JC PAPER	-
CORTESE	SAN JOSE	95112		CORNER OF CAPE HORN AND	MARIANI FRUIT PACKING PLANT DR	-
CORTESE	SAN JOSE	95112		CORNER OF CAPE HORN AND	HEWLETT PACKARD BUILDINGS 28A	-
CORTESE	SAN JOSE	95112		CORNER OF CAPE HORN AND	CITY OF SAN JOSE 1-X	-
CORTESE	SAN JOSE	00000	2060	GIGUERE CT	SAN JOSE CRANE & RIGGING	-
CORTESE	SAN JOSE	00000	1620	HIGHLAND DR	BROWN RESIDENCE	-
CORTESE	SAN JOSE	95148	20502	JOHN MONTGOMERY	AIRPORT PROPERTIES	-
CORTESE	SAN JOSE	95133	865	LENFEST	CARRIAGE HOUSE FOODS DIVISION	-
CORTESE	SAN JOSE	95133	865	LENFEST	CARRIAGE HOUSE FOODS	-
CORTESE	SAN JOSE	00000		LICK AVE	SCC TRANS DIST: LICK-ALMA S	-
CORTESE	SAN JOSE	00000	101	MONTEREY HWY	COYOTE TEXACO	-
CORTESE	SAN JOSE	95123	12490	PIEDMONT RD	TEXACO (FORMER)	
CORTESE	SAN JOSE	95112	1825	REMUDA LANE	SUPERIOR TILE COMPANY	

Agency	City	Zip	St #	Street Name	Site Name	NFA?
CORTESE	SAN JOSE	95112	1825	REMUDA LANE	NPD MIN-SUPERIOR TILE COMPANY	-
CORTESE	SAN JOSE	00000	150	SAN CARLOS ST	SAN JOSE CONVENTION CENTER	-
CORTESE	SAN JOSE	95050	1500	SPACE PARK DR	ALALOG DEVICES INC.	-
CORTESE	SAN JOSE	00000	128	ST JOHN ST	LOOMIS-ARMORED INC	-
CORTESE	SAN JOSE	00000	247	ST JOHN ST	RICHARDSON'S AUTO SERVICE	-
CORTESE	SAN JOSE	95113	525	ST JOHN ST	SAN JOSE FOUNDRY	-
CORTESE	SAN JOSE	00000	555	ST JOHN ST	CUSTOM PAD & PATTERN/LA FIESTA	-
CORTESE	SAN JOSE	00000	555	ST JOHN ST	CUSTOM PAD & PARTITION CO. INC	-
CORTESE	SAN JOSE	00000	2	ST N	SAN JOSE TRANSIT MALL	-
CORTESE	SAN JOSE	00000	8	ST N	XOM/MARIANI PACKING CO	-
CORTESE	SAN JOSE	00005		THE ALAMEDA	VIMAL KUMAR	-
CORTESE	SAN JOSE	95135	2000	VILLAGES PKWY	UDC HOMES	-
CORTESE	SAN JOSE	90071	1995	WARBURTON AVE	ARCO	-
CORTESE	SAN JOSE	00000	25	WASHINGTON ST	ROTTEN ROBBIE	-
CORTESE	SAN JOSE	00000	230	WINCHESTER BLVD	MOBILE SERVICE STATION	-
AWP	MOUNTAIN VIEW	94089		MOFFET ROAD	MOFFETT FIELD NAS/OU-1	-
AWP	MOUNTAIN VIEW	94089		MOFFETT ROAD	MOFFETT FIELD NAS/OU-2	-
AWP	MOUNTAIN VIEW	94089		MOFFETT ROAD	MOFFETT FIELD NAS/OU-3	-
AWP	MOUNTAIN VIEW	94089		MOFFETT ROAD	MOFFETT FIELD NAS/OU-5	-
AWP	MOUNTAIN VIEW	94089		MOFFETT ROAD	MOFFETT FIELD NAS/OU-6	-
AWP	SAN JOSE	95101		ALMADEN ROAD	ALMADEN QUICKSILVER COUNTY PARK	-
ASPIS	MENLO PARK	94025	1200	CHREPLER DRIVE	AMPEX INTERNATIONAL OPERATION, INC	NO
ASPIS	MENLO PARK	94025		P.O. BOX 2287	KAYE SANDY ENTERPRISES INC.	NO
ASPIS	MOUNTAIN VIEW	94089		MOFFET ROAD	MOFFETT FIELD NAS/OU-1	NO
ASPIS	MOUNTAIN VIEW	94089		MOFFETT ROAD	MOFFETT FIELD NAS/OU-2	NO
ASPIS	MOUNTAIN VIEW	94089		MOFFETT ROAD	MOFFETT FIELD NAS/OU-3	NO
ASPIS	MOUNTAIN VIEW	94089		MOFFETT ROAD	MOFFETT FIELD NAS/OU-5	NO
ASPIS	MOUNTAIN VIEW	94089		MOFFETT ROAD	MOFFETT FIELD NAS/OU-6	NO
ASPIS	SAN JOSE	95101		ALMADEN ROAD	ALMADEN QUICKSILVER COUNTY PARK	NO
ASPIS	SAN JOSE	95127		BOLLINGER ROAD	ORCHARD FARM SHOPPING CENTER	NO
ASPIS	SAN JOSE	95134		LOS ESTEROS RD	OWENS-CORNING FIBERGLAS CORP LDFL-AL	NO
ASPIS	MENLO PARK	94025	4100	BAYSHORE HIGHWAY	JOHNSON AND JOHNSON	Y
ASPIS	MENLO PARK	94025		CIVIC CENTER	CITY OF MENLO PARK	Y
ASPIS	MENLO PARK	94025		MENLO PARK	MENLO PARK MARINA	Y
ASPIS	MENLO PARK	94025		MIDDLEFIELD ROAD	LANE MAGAZINE AND BOOK COMPANY	Y
ASPIS	MENLO PARK	94025		P.O. BOX 2266	SEQUOIA ANALYTICAL LABORATORY	Y
ASPIS	MENLO PARK	94025		P.O. BOX 7031	FERGUSON OSCAR TERMITE CONTRL	Y
ASPIS	MENLO PARK	94025		P.O. BOX 7298	STANFORD ASSOCIATES INC	Y
ASPIS	MENLO PARK	94025		PO BOX 2736	OIL MANAGEMENT & EXPLORATION	Y
ASPIS	MENLO PARK	94025		PO BOX 700	HOLMES, OSCAR C CORPORATION	Y
ASPIS	MENLO PARK	94025	1003	SOUTH BAYSHORE BOULEVARD	PENINSULA PLASTICS, INC	Y
ASPIS	MOUNTAIN VIEW	94042		BETW CHARLESTON SLOUGH & STEVENS CRE	MOUNTAIN VIEW LANDFILL GAS RECOVERY	Y
ASPIS	MOUNTAIN VIEW	94041		FRONT & CALDERON	SHELL OIL #2	Y
ASPIS	MOUNTAIN VIEW	94035		NEAR MOFFETT FIELD	BAYLANDS POND	Y
ASPIS	MOUNTAIN VIEW	94040		SAN ANTONIO RD	MT. VIEW SHORELINE REGIONAL PARK	Y
ASPIS	ORANGE	92668	14772	COLLINS	C-L CHEMICAL PRODUCTS	Y
ASPIS	SAN JOSE	95116	2895	24TH STREET	ALUMINUM SKIRTING MANUFACTURING	Y
ASPIS	SAN JOSE	95112		BAYSHORE	HOWARD ELECTRONICS	Y

Agency	City	Zip	St #	Street Name	Site Name	NFA?
ASPIS	SAN JOSE	95124	1271	LOS GATOS-ALMADEN ROAD	RAMIREZ FERTILIZER	Y
ASPIS	SAN JOSE	95138		MIXER RD, OFF METCALF AND SAN FELIPE	UNITED TECHNOLOGIES CORP, CHEM SYSTE	Y
ASPIS	SAN JOSE	95112		MONTEREY RD NR PHELAN	RICHFIELD OIL CORP	Y
ASPIS	SAN JOSE	95110	525	SAN AUGUSTINE	SAN JOSE FOUNDRY #2	Y
ASPIS	SAN JOSE	95125	132	SPENCER AVENUE	CITY TOOL & DIE MANUFACTURING COMPAN	Y
ASPIS	SAN JOSE	95111	4206	UMBARGER	DUTCH PRIDE PRODUCTS	Y
HWIS	LOS ALTOS	N/A	601	RANCHO SHOPPING CENTER	RANCHO AUTO SERVICE	-
HWIS	MOUNTAIN VIEW	N/A	1040	L AVENIDA	HUNTINGTON MECHANICAL LABS	-
HWIS	MOUNTAIN VIEW	N/A	1201	SAN ANTONIO RD	SCIENTIFIC TECHOLOGY	-
HWIS	MOUNTAIN VIEW	N/A	2499	SHORELINE BLVD	LAIDLAW GAS RECOVERY SYSTEMS	-
HWIS	MOUNTAIN VIEW	N/A	2535	TRUMAN AVE	LOS ALTOS MOUNTAIN VIEW HS	-
HWIS	MOUNTAIN VIEW	N/A	4223	WYANDOTTE STREET	LIFESCAN INC	-
HWIS	N/A	N/A		SANTA CLARA COUNTY	SANTA CLARA COUNTY/EMERG RESPONSE ON	-
HWIS	PALO ALTO	N/A	601	CALIFORNIA AVE	VARIAN ASSOCIATES LSE DIVISION	-
HWIS	PALO ALTO	N/A	601	CALIFORNIA AVENUE	VARIAN ASSOCIATES INC	-
HWIS	PERMANENTE	N/A		KAISER	KAISER CEMENT CO PERMANENTE	-
HWIS	SAB JOSE	N/A	2619	IRCGARD OARJWAT	ALTERA CORPORATION	-
HWIS	SAN JOSE	N/A	1955	1953 LUNDY	QUANTUM CORP BLD 7 & 8	-
HWIS	SAN JOSE	N/A	849	FORTUNE DRIVE	SEEQ TECHNOLOGY, INC.	-
HWIS	SAN JOSE	N/A	351	REYES ST	RAINERI AUTOMOTIVE	-
HWIS	SAN JOSE	N/A	1582	S FIRST ST	SUN GARDEN PACKING CO	-
HWIS	SAN JOSE	N/A		WASHINGTON SQUARE	SAN JOSE STATE UNIVERSITY	-
HWIS	SAN JOSE	N/A		WASHINGTON SQUARE	SAN JOSE STATE UNIVERSITY	-
HWIS	SANTA CLARA	N/A		986B W GLENWOOD	NOR-CAL OIL	-
HWIS	SANTA CLARA	N/A		986B W GLENWOOD	NOR-CAL OIL	-
SWIS	MOUNTAIN VIEW	N/A		NORTHERN AREA OF FIELD; ADJACENT TO	NAS MOFFETT FIELD SANITARY LANDFILL	-
SWIS	SAN JOSE	N/A		LOS ESTEROS ROAD	OWENS FIBERGLAS CO	-
SWIS	SAN JOSE	N/A		PALISADE DRIVE	COYOTE-HELLYER PARK LANDFILL	-
SWIS	SAN JOSE	N/A		REMILLARD COURT	STORY ROAD LANDFILL	-
SWIS	SAN JOSE	N/A		ROBERTS AVENUE	ROBERTS AVENUE LANDFILL	-
LUST	LOS ALTOS	N/A	5084	EL CAMINO REAL	VALLEY ELECTRIC/WALTERS FLOORS	NO
LUST	LOS ALTOS	N/A	23199	ST JOSEPH AVE	ST JOSEPH'S COLLEGE	NO
LUST	LOS ALTOS	N/A	27886	VIA VENTANA	N/A	NO
LUST	MOUNTAIN VIEW	N/A		SAN ANTONIO CIR	FAST MART	NO
LUST	MOUNTAIN VIEW	N/A	925	SHORELINE BLVD	EXXON	NO
LUST	MOUNTAIN VIEW	N/A	510	SHORELINE RD N	UNOCAL	NO
LUST	N/A	N/A		BRUSH CR/FRSTGLN/SHE	BRUSH CREEK DEVELOPMENT AREA	NO
LUST	N/A	N/A		N/A	K-T JUSD CORPORATION YARD	NO
LUST	N/A	N/A		N/A	MCNAMARA & PEEPE	NO
LUST	PALO ALTO	N/A	985	CHURCHILL AVE	PALO ALTO UNIFIED SCHOOL DIST	NO
LUST	PALO ALTO	N/A		DPS	STANFORD	NO
LUST	PALO ALTO	N/A		FLEET SERVICE STATIO	STANFORD UNIVERSITY	NO
LUST	PALO ALTO	N/A		GINZTON LAB	STANFORD	NO
LUST	PALO ALTO	N/A		GOLF COURSE	STANFORD ATHLETIC DEPARTMENT	NO
LUST	PALO ALTO	N/A		HANSON LAB	STANFORD	NO
LUST	PALO ALTO	N/A		HIGH TECH GAS LAB	STANFORD	[illegible]

Agency	City	Zip	St #	Street Name	Site Name	NFA?
LUST	PALO ALTO	N/A		KNOLL	STANFORD	NO
LUST	PALO ALTO	N/A		MECHANICAL ENG BLDG	STANFORD	NO
LUST	PALO ALTO	N/A		OLD STEAM PLANT	STANFORD	NO
LUST	PALO ALTO	N/A		PALOU ST	STANFORD UNIVERSITY	NO
LUST	PALO ALTO	N/A		SAN ANTONIO RD	JC PENNEY	NO
LUST	SAN JOSE	N/A	1535	&15510TH ST S	MILLER PLATT & OWEN	NO
LUST	SAN JOSE	N/A		2222222 BONAVENTURA DR	COMPETITION PARTS WAREHOUSE	NO
LUST	SAN JOSE	N/A	302	51ST ST	ORIGINAL JOES	NO
LUST	SAN JOSE	N/A	999	BLOSSOM RIVER DR	ATRIUM VENTURES	NO
LUST	SAN JOSE	N/A	2060	GIGUERE CT	SAN JOSE CRANE & RIGGING	NO
LUST	SAN JOSE	N/A		GREYSTONE LN	SCVWD PROPERTY	NO
LUST	SAN JOSE	N/A	20502	JOHN MONTGOMERY DR	AIRPORT PROPERTIES	NO
LUST	SAN JOSE	N/A		LICK AVE	SCC TRANS DIST: LICK-ALMA S	NO
LUST	SAN JOSE	N/A	150	METCALF RD	PG&E	NO
LUST	SAN JOSE	N/A	101	MONTEREY HWY	COYOTE TEXACO	NO
LUST	SAN JOSE	N/A	53	MONTEREY ST S	PERRUCCI PROPERTY	NO
LUST	SAN JOSE	N/A		MT UMHUMUM/HICKS RD	PACIFIC BELL	NO
LUST	SAN JOSE	N/A	1291	OAKLAND RD	LANGENDORF BAKERIES	NO
LUST	SAN JOSE	N/A	12490	PIEDMONT RD	TEXACO (FORMER)	NO
LUST	SAN JOSE	N/A	5790	STEVENS CREEK BLVD	BREUNER-PERVARNICH	NO
LUST	SAN JOSE	N/A		THE ALAMEDA	VIMAL KUMAR	NO
LUST	SAN JOSE	N/A	1250	TOWNSEND PARK CL	CHAN NURSERY	NO
LUST	SAN JOSE	N/A	2000	VILLAGES PKWY	UDC HOMES	NO
LUST	UNINCORPORATED	N/A	11315	DEL PUERTO RD	SCC TRANS DIST: DEL PUERTO RD	NO
LUST	UNINCORPORATED	N/A		MONTEREY RD	RIVERSIDE GOLF COURSE	NO
LUST	UNINCORPORATED	N/A		PERMANENTE DR	KAISER CEMENT	NO
LUST	UNINCORPORATED	N/A		RYLAND ST	SCC TRANS DIST: RYLAND ST	NO

NFA code descriptions: "-" indicates the agency did not supply this information; "Y" indicates there was "No Further Action" planned for the site (ASPIS/CAL-SITES) or "Case Closed" (LUST); "NO" indicates the agency did not mark the site "No Further Action" or "Case Closed", but does supply this information. For the CERCLIS database a "Y" indicates that all CERCLIS events for the site show an actual completion date and the most recent event indicates "no further remedial action planned."

APPENDIX B

TERRATECH, INC.
ENVIRONMENTAL SERVICES DIVISION
EXCERPTS AND ADAPTATIONS OF STANDARD PROCEDURES
FOR ADOBE CREEK SPOT SAMPLING WORK

TERRATECH, INC.
ENVIRONMENTAL SERVICES DIVISION
EXCERPTS AND ADAPTATIONS OF STANDARD PROCEDURES FOR ADOBE CREEK SPOT SAMPLING WORK

OBJECTIVE

Soil and water (leachate) samples are collected at targeted sites to determine the presence and concentration of suspected contaminants in the medium at that specific point (or composite of points), or to provide documentation on the absence of such contamination. Decisions on sample locations and depths were made with the objective of selecting the most likely zone where contamination would be found, if present.

SOIL SAMPLING

Soil samples are collected into precleaned brass liners using precleaned trowels or shovels to first expose undisturbed, representative soil from the targetted strata. Samples to be analyzed for content of specific metals are collected into glass containers supplied by the laboratory. Sample containers are filled, then sealed with Teflon tape and taped endcaps and labelled. At a minimum, sample liners are labelled with the project number, date and distinguishing sample ID number. The containers are then sealed in individual Ziploc bags. Samples are stored in a cooler or refrigerator until delivered to the laboratory. Standard chain-of-custody procedures are maintained to document sample collection, handling, and analytical requests. All sample compositing is done in laboratory-controlled conditions.

WATER (LEACHATE) SAMPLING

Surficial water (leachate) samples are placed in containers appropriate for specific required analyses. Depending upon analytical requirements, the sample containers may contain laboratory-added preservatives. In the case of fecal coliform sampling, a water sample is collected from the point of emergence, into a 100 milliliter plastic bottle provided by the laboratory.

At a minimum, sample bottles are labelled with the project number, date and distinguishing sample ID number. The containers are then sealed in individual Ziploc bags. Samples are stored in a cooler or refrigerator until delivered to the laboratory. Standard chain-of-custody procedures are maintained to document sample collection, handling, and analytical requests.

EQUIPMENT DECONTAMINATION

Prior to use, all sampling equipment including digging tools, brass liners and water bailers are either steam cleaned, or washed in a non-phosphate soap solution, rinsed twice in potable water, then rinsed in distilled water.

LABORATORY ANALYSIS

Samples are submitted to the laboratory as soon as possible, usually within one to two days of retrieval, well in advance of the recommended maximum holding time for the specific analytical method. Analysis is performed in State-certified hazardous materials analytical laboratories.

Adobe Creek soil samples were transferred under chain-of-custody documentation to a representative of the Water District for submittal to Curtis & Tompkins, Ltd. in Berkeley for analysis. The one water (leachate) sample was transported by Terratech to Soil Control Lab in Watsonville for analysis of fecal coliform.

Specific methods and procedures, and QA/QC documentation for the laboratory testing performed on the Adobe Creek Hazardous Materials Assessment project are included in Appendix C of this report.

APPENDIX C

Analytical Laboratory Reports
and
Chain-of-Custody Record

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Date: 17-NOV-93
Lab Job Number: 112960
Project ID: 93-46-2-1010
Location: Adobe Creek

Reviewed by: K Morrison

Reviewed by:

This package may be reproduced only in its entirety.

SAMPLE ID: LF613
LAB ID: 112960-001
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-46-2-1010
LOCATION: Adobe Creek
MATRIX: Soil

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE REPORTED: 11/17/93

EPA Priority Pollutant Metals

Compound	Result (mg/Kg)	Reporting Limit (mg/Kg)	QC Batch	Method	Analysis Date
Antimony	ND	3.0	11249	EPA 6010	11/03/93
Arsenic	ND	2.5	11336	EPA 7060	11/10/93
Beryllium	0.31	0.10	11249	EPA 6010	11/03/93
Cadmium	ND	0.25	11249	EPA 6010	11/03/93
Chromium (total)	110	0.50	11249	EPA 6010	11/03/93
Copper	39	0.50	11249	EPA 6010	11/03/93
Lead	3.8	1.5	11336	EPA 7421	11/10/93
Mercury	ND	0.095	11298	EPA 7471	11/04/93
Nickel	91	1.6	11249	EPA 6010	11/03/93
Selenium	ND	2.5	11336	EPA 7740	11/10/93
Silver	ND	0.50	11249	EPA 6010	11/03/93
Thallium	ND	2.5	11336	EPA 7841	11/10/93
Zinc	47	1.0	11249	EPA 6010	11/03/93

ND = Not detected at or above reporting limit

SAMPLE ID: LF626
LAB ID: 112960-002
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-46-2-1010
LOCATION: Adobe Creek
MATRIX: Soil

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE REPORTED: 11/17/93

EPA Priority Pollutant Metals

Compound	Result (mg/Kg)	Reporting Limit (mg/Kg)	QC Batch	Method	Analysis Date
Antimony	ND	3.0	11249	EPA 6010	11/03/93
Arsenic	2.6	2.5	11336	EPA 7060	11/10/93
Beryllium	0.39	0.10	11249	EPA 6010	11/03/93
Cadmium	ND	0.25	11249	EPA 6010	11/03/93
Chromium (total)	120	0.50	11249	EPA 6010	11/03/93
Copper	46	0.50	11249	EPA 6010	11/03/93
Lead	8.4	1.5	11336	EPA 7421	11/10/93
Mercury	ND	0.10	11298	EPA 7471	11/04/93
Nickel	100	1.6	11249	EPA 6010	11/03/93
Selenium	ND	2.5	11336	EPA 7740	11/10/93
Silver	ND	0.50	11249	EPA 6010	11/03/93
Thallium	ND	2.5	11336	EPA 7841	11/10/93
Zinc	60	1.0	11249	EPA 6010	11/03/93

ND = Not detected at or above reporting limit

Curtis & Tompkins, Ltd.

SAMPLE ID: FH508
LAB ID: 112960-003
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-46-2-1010
LOCATION: Adobe Creek
MATRIX: Soil

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE REPORTED: 11/17/93

EPA Priority Pollutant Metals

Compound	Result (mg/Kg)	Reporting Limit (mg/Kg)	QC Batch	Method	Analysis Date
Antimony	4.5	3.0	11249	EPA 6010	11/03/93
Arsenic	3.2	2.5	11336	EPA 7060	11/10/93
Beryllium	0.50	0.20	11249	EPA 6010	11/03/93
Cadmium	ND	0.50	11249	EPA 6010	11/03/93
Chromium (total)	160	0.99	11249	EPA 6010	11/03/93
Copper	62	0.50	11249	EPA 6010	11/03/93
Lead	7.7	1.5	11336	EPA 7421	11/10/93
Mercury	ND	0.10	11298	EPA 7471	11/04/93
Nickel	140	1.6	11249	EPA 6010	11/03/93
Selenium	ND	2.5	11336	EPA 7740	11/10/93
Silver	ND	0.99	11249	EPA 6010	11/03/93
Thallium	ND	2.5	11336	EPA 7841	11/10/93
Zinc	69	2.0	11249	EPA 6010	11/03/93

ND = Not detected at or above reporting limit

Curtis & Tompkins, Ltd.

SAMPLE ID: ALTM310
LAB ID: 112960-004
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-46-2-1010
LOCATION: Adobe Creek
MATRIX: Soil

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE REPORTED: 11/17/93

EPA Priority Pollutant Metals

Compound	Result (mg/Kg)	Reporting Limit (mg/Kg)	QC Batch	Method	Analysis Date
Antimony	4.2	2.9	11249	EPA 6010	11/03/93
Arsenic	ND	2.5	11336	EPA 7060	11/10/93
Beryllium	0.39	0.098	11249	EPA 6010	11/03/93
Cadmium	0.29	0.25	11249	EPA 6010	11/03/93
Chromium (total)	110	0.49	11249	EPA 6010	11/03/93
Copper	51	0.49	11249	EPA 6010	11/03/93
Lead	15	1.5	11336	EPA 7421	11/10/93
Mercury	ND	0.095	11298	EPA 7471	11/04/93
Nickel	80	1.6	11249	EPA 6010	11/03/93
Selenium	ND	2.5	11336	EPA 7740	11/10/93
Silver	ND	0.49	11249	EPA 6010	11/03/93
Thallium	ND	2.5	11336	EPA 7841	11/10/93
Zinc	63	0.98	11249	EPA 6010	11/03/93

ND = Not detected at or above reporting limit

Curtis & Tompkins, Ltd.

SAMPLE ID: HV634
LAB ID: 112960-005
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-46-2-1010
LOCATION: Adobe Creek
MATRIX: Soil

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE REPORTED: 11/17/93

EPA Priority Pollutant Metals

Compound	Result (mg/Kg)	Reporting Limit (mg/Kg)	QC Batch	Method	Analysis Date
Antimony	ND	3.0	11249	EPA 6010	11/03/93
Arsenic	ND	2.5	11336	EPA 7060	11/10/93
Beryllium	0.31	0.10	11249	EPA 6010	11/03/93
Cadmium	0.33	0.25	11249	EPA 6010	11/03/93
Chromium (total)	78	0.50	11249	EPA 6010	11/03/93
Copper	45	0.50	11249	EPA 6010	11/03/93
Lead	12	1.5	11336	EPA 7421	11/10/93
Mercury	ND	0.095	11298	EPA 7471	11/04/93
Nickel	72	1.6	11249	EPA 6010	11/03/93
Selenium	ND	2.5	11336	EPA 7740	11/10/93
Silver	ND	0.50	11249	EPA 6010	11/03/93
Thallium	ND	2.5	11336	EPA 7841	11/10/93
Zinc	66	1.0	11249	EPA 6010	11/03/93

ND = Not detected at or above reporting limit

Curtis & Tompkins, Ltd.

CLIENT: Santa Clara Valley Water District DATE REPORTED: 11/17/93
JOB NUMBER: 112960

BATCH QC REPORT
PREP BLANK

Compound	Result	Reporting Limit	Units	QC Batch	Method	Analysis Date
Antimony	ND	3	mg/Kg	11249	EPA 6010	11/02/93
Beryllium	ND	0.1	mg/Kg	11249	EPA 6010	11/02/93
Cadmium	ND	0.25	mg/Kg	11249	EPA 6010	11/02/93
Chromium (total)	ND	0.5	mg/Kg	11249	EPA 6010	11/02/93
Copper	ND	0.5	mg/Kg	11249	EPA 6010	11/02/93
Nickel	ND	1.6	mg/Kg	11249	EPA 6010	11/02/93
Silver	ND	0.5	mg/Kg	11249	EPA 6010	11/02/93
Zinc	ND	1	mg/Kg	11249	EPA 6010	11/02/93
Mercury	ND	0.2	ug/L	11298	EPA 7470	11/04/[illegible]
Arsenic	ND	2.5	mg/Kg	11336	EPA 7060	11/09/93
Lead	ND	1.5	mg/Kg	11336	EPA 7421	11/10/93
Selenium	ND	2.5	mg/Kg	11336	EPA 7740	11/10/93
Thallium	ND	2.5	mg/Kg	11336	EPA 7841	11/09/93

ND = Not detected at or above reporting limit

Curtis & Tompkins, Ltd.

CLIENT: Santa Clara Valley Water District **DATE REPORTED: 11/17/93**
JOB NUMBER: 112960

BATCH QC REPORT
BLANK SPIKE/BLANK SPIKE DUPLICATE

Compound	Spike Amount	BS Result	BSD Result	Units	BS % Recovery	BSD % Recovery	Average Recovery	RPD	QC Batch	Method	Analysis Date
Antimony	500	487.4	451.1	ug/L	98	90	94	8	11249	EPA 6010	11/02/93
Beryllium	50	48.7	48.2	ug/L	97	96	97	1	11249	EPA 6010	11/02/93
Cadmium	50	53.4	51.1	ug/L	107	102	105	4	11249	EPA 6010	11/02/93
Chromium (total)	200	203.3	205.3	ug/L	102	103	103	1	11249	EPA 6010	11/02/93
Copper	250	252.2	251.7	ug/L	101	101	101	0	11249	EPA 6010	11/02/93
Nickel	500	510.3	509.2	ug/L	102	102	102	0	11249	EPA 6010	11/02/93
Silver	50	46.5	48.8	ug/L	93	98	96	5	11249	EPA 6010	11/02/93
Zinc	500	492	486.2	ug/L	98	97	98	1	11249	EPA 6010	11/02/93
Mercury	4	4.165	4.165	ug/L	104	104	104	0	11298	EPA 7470	11/04/93
Arsenic	40	417.5	421.9	ug/L	104	106	105	1	11336	EPA 7060	11/09/93
Lead	30	301.1	301.3	ug/L	100	100	100	0	11336	EPA 7421	11/10/93
Selenium	30	288.5	297.7	ug/L	96	99	98	3	11336	EPA 7740	11/10/93
[illegible]llium	40	415.7	464.4	ug/L	104	116	110	11	11336	EPA 7841	11/09/93

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-001
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-43-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: LF 613

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE EXTRACTED: 11/10/93
DATE ANALYZED: 11/11/93
DATE REPORTED: 11/17/93

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	300
Acenaphthylene	ND	300
Acenaphthene	ND	300
Fluorene	ND	300
Phenanthrene	ND	300
Anthracene	ND	300
Fluoranthene	ND	300
Pyrene	ND	300
Benzo(a)anthracene	ND	300
Chrysene	ND	300
Benzo(b)fluoranthene	ND	300
Benzo(k)fluoranthene	ND	300
Benzo(a)pyrene	ND	300
Indeno(1,2,3-cd)pyrene	ND	300
Dibenzo(a,h)anthracene	ND	300
Benzo(g,h,i)perylene	ND	300

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

2-Fluorobiphenyl	81 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-002	DATE SAMPLED: 10/29/93
CLIENT: SANTA CLARA VALLEY WATER DISTRICT	DATE RECEIVED: 11/01/93
PROJECT ID: 93-43-2-1010	DATE EXTRACTED: 11/10/93
LOCATION: ADOBE CREEK	DATE ANALYZED: 11/11/93
SAMPLE ID: LF 626	DATE REPORTED: 11/17/93

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	300
Acenaphthylene	ND	300
Acenaphthene	ND	300
Fluorene	ND	300
Phenanthrene	ND	300
Anthracene	ND	300
Fluoranthene	ND	300
Pyrene	ND	300
Benzo(a)anthracene	ND	300
Chrysene	ND	300
Benzo(b)fluoranthene	ND	300
Benzo(k)fluoranthene	ND	300
Benzo(a)pyrene	ND	300
Indeno(1,2,3-cd)pyrene	ND	300
Dibenzo(a,h)anthracene	ND	300
Benzo(g,h,i)perylene	ND	300

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

2-Fluorobiphenyl	75 %

LABORATORY NUMBER: 112960-003
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-43-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: FH 508

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE EXTRACTED: 11/10/93
DATE ANALYZED: 11/11/93
DATE REPORTED: 11/17/93

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	300
Acenaphthylene	ND	300
Acenaphthene	ND	300
Fluorene	ND	300
Phenanthrene	ND	300
Anthracene	ND	300
Fluoranthene	ND	300
Pyrene	ND	300
Benzo(a)anthracene	ND	300
Chrysene	ND	300
Benzo(b)fluoranthene	ND	300
Benzo(k)fluoranthene	ND	300
Benzo(a)pyrene	ND	300
Indeno(1,2,3-cd)pyrene	ND	300
Dibenzo(a,h)anthracene	ND	300
Benzo(g,h,i)perylene	ND	300

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

2-Fluorobiphenyl	78 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-METHOD BLANK
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-43-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: N/A

DATE SAMPLED: N/A
DATE RECEIVED: N/A
DATE EXTRACTED: 11/10/93
DATE ANALYZED: 11/10/93
DATE REPORTED: 11/17/93

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	300
Acenaphthylene	ND	300
Acenaphthene	ND	300
Fluorene	ND	300
Phenanthrene	ND	300
Anthracene	ND	300
Fluoranthene	ND	300
Pyrene	ND	300
Benzo(a)anthracene	ND	300
Chrysene	ND	300
Benzo(b)fluoranthene	ND	300
Benzo(k)fluoranthene	ND	300
Benzo(a)pyrene	ND	300
Indeno(1,2,3-cd)pyrene	ND	300
Dibenzo(a,h)anthracene	ND	300
Benzo(g,h,i)perylene	ND	300

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

2-Fluorobiphenyl	78 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-001
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-46-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: LF 613

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE ANALYZED: 11/08/93
DATE REPORTED: 11/16/93

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	98 %
Toluene-d8	116 %
Bromofluorobenzene	82 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-002	DATE SAMPLED: 10/29/93
CLIENT: SANTA CLARA VALLEY WATER DISTRICT	DATE RECEIVED: 11/01/93
PROJECT ID: 93-46-2-1010	DATE ANALYZED: 11/09/93
LOCATION: ADOBE CREEK	DATE REPORTED: 11/16/93
SAMPLE ID: LF 626	

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	93 %
Toluene-d8	114 %
Bromofluorobenzene	82 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-003
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-46-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: FH 508

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE ANALYZED: 11/08/93
DATE REPORTED: 11/16/93

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	101 %
Toluene-d8	127 %
Bromofluorobenzene	74 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-004
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-46-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: ALTM 310

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE ANALYZED: 11/08/93
DATE REPORTED: 11/16/93

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	102 %
Toluene-d8	128 %
Bromofluorobenzene	69 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-005
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-46-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: HV 634

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE ANALYZED: 11/08/93
DATE REPORTED: 11/16/93

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	101 %
Toluene-d8	133 %
Bromofluorobenzene	84 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-METHOD BLANK
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-46-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: N/A

DATE SAMPLED: N/A
DATE RECEIVED: N/A
DATE ANALYZED: 11/08/93
DATE REPORTED: 11/16/93

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	105 %
Toluene-d8	98 %
Bromofluorobenzene	99 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960-METHOD BLANK
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-46-2-1010
LOCATION: ADOBE CREEK
SAMPLE ID: N/A

DATE SAMPLED: N/A
DATE RECEIVED: N/A
DATE ANALYZED: 11/09/93
DATE REPORTED: 11/16/93

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	98 %
Toluene-d8	101 %
Bromofluorobenzene	97 %

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

MS/MSD Report

Matrix Sample Number: 113083-001
Lab No: QC52158 QC52159
Matrix: SOIL
Batch No: 11341 938794 938796 938789

Date Analyzed: 08-NOV-93
Spike File: >CK807
Spike Dup File: >CK808
Analyst: CW

	Instrdg	SpikeAmt	% Rec	Limits
MS RESULTS				
1,1-Dichloroethene	51.19	50	102 %	59-172%
Trichloroethene	53.08	50	106 %	62-137%
Benzene	51.59	50	102 %	66-142%
Toluene	49.85	50	100 %	59-139%
Chlorobenzene	53.81	50	108 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	54.2	50	108 %	70-121%
Toluene-d8	54.09	50	108 %	81-117%
Bromofluorobenzene	46.59	50	93 %	74-121%
MSD RESULTS				
1,1-Dichloroethene	52.59	50	105 %	59-172%
Trichloroethene	54.21	50	108 %	62-137%
Benzene	54.36	50	107 %	66-142%
Toluene	52.71	50	105 %	59-139%
Chlorobenzene	56.46	50	113 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	53.1	50	106 %	70-121%
Toluene-d8	54.58	50	109 %	81-117%
Bromofluorobenzene	45.05	50	90 %	74-121%
MATRIX RESULTS				
1,1-Dichloroethene	0			
Trichloroethene	0			
Benzene	.661			
Toluene	0			
Chlorobenzene	0			
RPD DATA				
1,1-Dichloroethene	3 %			< 22%
Trichloroethene	2 %			< 24%
Benzene	5 %			< 21%
Toluene	6 %			< 21%
Chlorobenzene	5 %			< 21%

Results within Specifications - PASS CW 11/9/93

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 112960
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-43-2-1010
LOCATION: ADOBE CREEK

DATE SAMPLED: 10/29/93
DATE RECEIVED: 11/01/93
DATE EXTRACTED: 11/09/93
DATE ANALYZED: 11/11,12/93
DATE REPORTED: 11/17/93

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
112960-001	LF 613	**	15	1
112960-002	LF 626	**	6	1
112960-003	FH 508	**	25	1
112960-004	ALTM 310	**	17	1
112960-005	HV 634	**	37	1
METHOD BLANK	N/A	ND	ND	1

ND = Not detected at or above reporting limit.
* Reporting limit applies to all analytes.

** Quantitated as diesel due to overlap of hydrocarbon ranges.

QA/QC SUMMARY: BS/BSD

RPD, %	4
RECOVERY, %	86

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

MS/MSD Report

Matrix Sample Number: 113111-004
Lab No: QC52255 QC52256
Matrix: SOIL
Batch No: 11368 938859 938861 938858

Date Analyzed: 09-NOV-93
Spike File: >CK906
Spike Dup File: >CK907
Analyst: CW

	Instrdg	SpikeAmt	% Rec	Limits
MS RESULTS				
1,1-Dichloroethene	51.22	50	102 %	59-172%
Trichloroethene	52.38	50	105 %	62-137%
Benzene	55.48	50	110 %	66-142%
Toluene	53.22	50	106 %	59-139%
Chlorobenzene	54.4	50	109 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	48.79	50	98 %	70-121%
Toluene-d8	55.19	50	110 %	81-117%
Bromofluorobenzene	45.63	50	91 %	74-121%
MSD RESULTS				
1,1-Dichloroethene	47.8	50	96 %	59-172%
Trichloroethene	49.86	50	100 %	62-137%
Benzene	51.55	50	102 %	66-142%
Toluene	49.84	50	100 %	59-139%
Chlorobenzene	51.46	50	103 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	51.14	50	102 %	70-121%
Toluene-d8	54.79	50	110 %	81-117%
Bromofluorobenzene	44.54	50	89 %	74-121%
MATRIX RESULTS				
1,1-Dichloroethene	0			
Trichloroethene	0			
Benzene	.716			
Toluene	0			
Chlorobenzene	0			
RPD DATA				
1,1-Dichloroethene	7 %			< 22%
Trichloroethene	5 %			< 24%
Benzene	7 %			< 21%
Toluene	7 %			< 21%
Chlorobenzene	6 %			< 21%

Results within Specifications - PASS CW 11/10/93

P.24/24

7891 WESTWOOD DRIVE, SUITE 101
GILROY, CA 95020
(408) 842-0236
TERRATECH

CHAIN-OF-CUSTODY RECORD

P.O. NUMBER:

TURNAROUND: 2 WK

FAX reports upon completion to: (408) 842-7314
Mail reports to: TERRATECH, INC.
7891 WESTWOOD DRIVE, SUITE 101, GILROY, CA 95020
ATTN:

PROJECT NUMBER: ADOBE CREEK

SAMPLER INITIALS: C. PRESLEY & M. BANNISTER

2960

	Sample Number	Depth	Date	Time	Medium	Sample Location	Number of Containers	Type of Containers	Preserved?	Analysis Required: 13 PRIORITY POLLUTANT METALS	EPA 8240	TPH(EXTRACTABLE) EPA 8015 MOD	EPA 8100 - PNA'S				Remarks	# Rec'd by CBT - TW
-1	LF613	1-2'	10/29/93	1000	SOIL	DOMESTIC LANDFILL STA 613+00	3ea	JARS RINGS	NA	X	X	X	X				COMPOSITE	6
-2	LF626	1-2	↓	↓	↓	DOMESTIC LANDFILL STA 626+00	3ea	JARS RINGS	↓	X	X	X	X				COMPOSITE	6
-3	FH508	1-2	↓	↓	↓	FOOTHILL COLLEGE STA 508+00	2ea	JARS RINGS	↓	X	X	X	X				COMPOSITE	4
-4	ALTM310	1-2	↓	↓	↓	ALTA MESA MEM. STA 312+00	2ea	JARS RINGS	↓	X	X	X					COMPOSITE	3
-5	HV634	1-2	↓	↓	↓	HIDDEN VILLA STA 634+00	2ea	JARS RINGS	↓	X	X	X					COMPOSITE	4

Relinquished by (signature): Carol Presley Company or Agency: SCVWD	Date/Time: 10/29/93 5:00pm	Received by (signature): sample refrigerator Company or Agency: SCVWD	Relinquished by (signature): Kevin Hau Company or Agency: SCVWD	Date/Time: 11/1/93 0900	Received by (signature): W. Kelly (LUFT-KC24) Company or Agency:
Relinquished by (signature): sample refrigerator Company or Agency: SCVWD	Date/Time: 11/1/93 7:40AM	Received by (signature): Kevin Hau Company or Agency: SCVWD	Relinquished by (signature): 8:25 [illegible] 11/1/93 Company or Agency: CH2M HILL	Date/Time: 11/1/93 1100	Received for Laboratory by (signature): [illegible] C. Norris Company or Agency: 11/1/93 1100

E-96

ANALYTICAL CHEMISTS
and
BACTERIOLOGISTS
Approved by State of California

42 HANGAR WAY
WATSONVILLE
CALIFORNIA
95076
USA

Tel 408 724 5422
FAX 408 724 3188

SAMPLE # DWL 465

TERRATECH, INC.
NOV 1 2 1993
RECEIVED

102497- 2641

Terratech Inc.
1365 Vander Way
San Jose CA 95112

1 Nov 1993

CERTIFIED ANALYTICAL REPORT

BACTERIOLOGICAL EXAMINATION OF WATER FOR COLIFORM ORGANISMS

MATERIAL: Water sample received 29 OCT 1993
REPORT: Bacteriological examination of water for total and fecal coliforms by MMO-MUG procedure using 100 millilter sample is as follows:

Identification	Total Coliforms	Fecal Coliforms
PROJECT 5499	PRESENT	PRESENT

Public Health Drinking Water Standards for bacteriological quality of drinking water are met when coliform organisms are absent in a water sample. If coliform organisms are present, the water is considered unsafe to drink unless the water is treated to remove the bacteria. NOTE: The above test does not establish whether this water meets Public Health Standards for chemical composition of drinking water

The undersigned certifies that the above is a true and accurate report of the findings of this laboratory.

Analyst

ANALYTICAL CHEMISTS
and
BACTERIOLOGISTS
Approved by State of California

CONTROL LAB

42 HANGAR WAY
WATSONVILLE
CALIFORNIA
95076
USA

Tel 408 724-5422
FAX 408 724-3188

- Division of Control Laboratories Inc

TERRATECH, INC.
NOV 1 2 1993
RECEIVED

102497- 2641

Terratech Inc.
1365 Vander Way
San Jose CA 95112

1 Nov 1993

CERTIFIED ANALYTICAL REPORT

BACTERIOLOGICAL EXAMINATION OF WATER FOR COLIFORM ORGANISMS

MATERIAL: Water sample received 29 OCT 1993
REPORT: Bacteriological examination of water for total and fecal coliforms by MMO-MUG procedure using 100 millilter sample is as follows:

Identification	Total Coliforms	Fecal Coliforms
PROJECT 5499	PRESENT	PRESENT

Public Health Drinking Water Standards for bacteriological quality of drinking water are met when coliform organisms are absent in a water sample. If coliform organisms are present, the water is considered unsafe to drink unless the water is treated to remove the bacteria. NOTE: The above test does not establish whether this water meets Public Health Standards for chemical composition of drinking water

The undersigned certifies that the above is a true and accurate report of the findings of this Laboratory.

Analyst

ANALYTICAL CHEMISTS
and
BACTERIOLOGISTS
Approved by State of California

Tel 408 724-5422
FAX 408 724 3188

SOIL CONTROL LAB

42 HANGAR WAY
WATSONVILLE
CALIFORNIA
95076
USA

A Division of Control Laboratories Inc.

TERRATECH, INC.
NOV 12 1993
RECEIVED

102497-1-2641

Terratech
1365 Vander Way
San Jose, CA 95112

10 NOV 93

CERTIFIED ANALYTICAL REPORT

MATERIAL: Water sample received 29 October 1993
IDENTIFICATION: Project 5499, 10/29/93
REPORT: Quantitative chemical analysis is as follows expressed as milligrams per liter (parts per million):

Ammonia Nitrogen (N)	34
MBAS (Surfactants)	9

The undersigned certifies that the above is a true and accurate report of the findings of this Laboratory.

Analyst

ANALYTICAL CHEMISTS
and
BACTERIOLOGISTS
Approved by State of California

SOIL CONTROL LAB

42 HANGAR WAY
WATSONVILLE
CALIFORNIA
95076
USA

A Division of Control Laboratories Inc.

Tel 408 724 5422
FAX 408 724 3188

TERRATECH, INC.
NOV 12 1995
RECEIVED

For any reference, please quote Certified Analytical Number appearing below.

102497-1-2641

Terratech
1365 Vander Way
San Jose, CA 95112

10 NOV 93

CERTIFIED ANALYTICAL REPORT

MATERIAL: Water sample received 29 October 1993
IDENTIFICATION: Project 5499, 10/29/93
REPORT: Quantitative chemical analysis is as follows expressed as milligrams per liter (parts per million):

Ammonia Nitrogen (N)	34
MBAS (Surfactants)	9

The undersigned certifies that the above is a true and accurate report of the findings of this Laboratory.

Analyst

APPENDIX D

Completed ASTM Questionnaires
for Interviews

SCVWD

ASTM DESIGNATION: E 1528-93

STANDARD PRACTICE FOR ENVIRONMENTAL SITE ASSESSMENTS: TRANSACTION SCREEN PROCESS

Question	Owner? *			Occupants (if applicable)			Observed During Site Visit		
1. Is the *property* or any *adjoining property* used for an industrial use?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	No	Unk
2. To the best of your knowledge, has the *property* or any *adjoining property* been used for an industrial use in the past?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	No	Unk
3. Is the *property* or any *adjoining property* used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, *disposal*, processing, or recycling facility?	[✓ Yes] 1	No	Unk	Yes	No	Unk	[✓ Yes] 1	No	Unk
4. To the best of your knowledge has the *property* or any *adjoining property* been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	[✓ Yes] 1	No	Unk	Yes	No	Unk	[✓ Yes] 1	No	Unk
5. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the *property* or at the facility?	[✓ Yes] 1	No	Unk	Yes	No	Unk	[✓ Yes] 1	No	Unk
6. Are there currently, or to the best of your knowledge have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	[✓ Yes] 1	No	Unk	Yes	No	Unk	[✓ Yes] 1	No	Unk
7. Has *fill dirt* been brought onto the property that originated from a contaminated site or that is of an unknown origin?	Yes	[✓ No] 2	Unk	Yes	No	Unk	Yes	[✓ No] 2	Unk
8. Are there currently, or to the best of your knowledge have there been previously, any *pits, ponds, or lagoons* located *on the property* in connection with waste treatment or waste disposal?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
9. Is there currently, or to the best of your knowledge has there been previously, any stained soil on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
10. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
11. Are there currently, or to the best of your knowledge have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property* or adjacent to any structure located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
12. Are there currently, or to the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
13. If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
14. Does the *owner* or *occupant* of the *property* have any knowledge of *environmental liens* or governmental notification relating to past or recurrent violations of environmental laws with respect to the *property* or any facility located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
15. Has the *owner* or *occupant* of the *property* been informed of the past or current existence of *hazardous substances* or *petroleum products* or environmental violations with respect to the *property* or any facility located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
16. Does the *owner* or *occupant* of the *property* have any knowledge of any *environmental site assessment* of the *property* or facility that indicated the presence of *hazardous substances* or *petroleum products* on, or contamination of, the *property* or recommended further assessment of the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk

SCVWD (cont'd)

Question	Owner*			Occupants (if applicable)			Observed During Site Visit		
17. Does the *owner* or *occupant* of the *property* know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property* by any owner or occupant of the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
18. Does the *property* discharge waste water on or adjacent to the *property* other than storm water into a sanitary sewer system?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
19. To the best of your knowledge, have any *hazardous substances* or *petroleum products*, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	[✓ Yes] 3	No	Unk	Yes	No	Unk	[✓ Yes] 3	No	Unk
20. Is there a transformer, capacitor, or any hydraulic equipment for which there are any records indicating the presence of PCBs?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk

Government Records/Historical Sources Inquiry

(See guide, Section 10)

21 Do any of the following Federal government record systems list the property or any property within the circumference of the area noted below:

National Priorities List—within 1.0 mile (1.6 Km)?	Yes	[✓ No]
CERCLIS List—within 0.5 mile (0.8 Km)?	Yes	[✓ No]
RCRA TSD Facilities—within 1.0 mile (1.6 Km)?	Yes	No

22. Do any of the following state record systems list the property or any property within the circumference of the area noted below:

List maintained by state environmental agency of hazardous waste sites identified for investigation or remediation that is the state agency equivalent to NPL—within approximately 1.0 mile (1.6 Km)?	[✓ Yes]	No
List maintained by state environmental agency of sites identified for investigation or remediation that is the state equivalent to CERCLIS—within 0.5 mile (0.8 Km)?	[✓ Yes]	No
Leaking Underground Storage Tank (LUST) List—within 0.5 mile (0.8 Km)?	[✓ Yes]	No
Solid Waste/Landfill Facilities—within 0.5 mile (0.8 Km)?	Yes	[✓ No]

23. Based upon a review of *fire insurance maps* or consultation with the local fire department serving the *property*, all as specified in the guide, are any buildings or other improvements on the *property* or on an *adjoining property* identified as having been used for an industrial use or uses likely to lead to contamination of the *property*? [✓ Yes] No N/A

The *preparer* of the *transaction screen questionnaire* must complete and sign the following statement. (For definition of "preparer" and "user," see 5.3 or 3.3 25.)

This questionnaire was completed by.
Name MARY BANNISTER
Title ENVIRONMENTAL GEOLOGIST
Firm TERRA TECH
Address 1365 VANDER WAY
SAN JOSE CA 95112
Phone number 408 297 6969
Date 11/23/93

If the preparer is different than the user, complete the following:
Name of user
User's address

User's phone number
Preparer's relationship to site
Preparer's relationship to user (for example, principal, employee, agent, consultant)

Copies of the completed questionnaire have been filed at:

Copies of the completed questionnaire have been mailed or delivered to:

Preparer represents that to the best of the preparer's knowledge the above statements and facts are true and correct and to the best of the preparer's actual knowledge no material facts have been suppressed or misstated.

Signature Date
Signature Date
Signature Date

* SCOTT WILSON - ASSOCIATE CIVIL ENGINEER
SANTA CLARA VALLEY WATER DISTRICT

NOTE: SCVWD HAD ONLY INFO. RELATED TO DISTRICT ACTIVITIES ALONG CREEK ALIGNMENT, SCVWD COULD NOT SPEAK FOR ACTIVITIES OF PROPERTY OWNERS ADJACENT TO CREEK (ie DUMPING INTO CREEK) OR TRESSPASSERS

1. MAINTENANCE FACILITES AT ALTA MESA MEMORIAL, FOOTHILL COLLEGE HANDLING PETROLEUM PRODUCTS, BATTERIES, ETC. 55 gal DRUMS STORED AT FOOTHILL WITH SECONDARY CONTAINMENT, SEALED & LABELLED

2. MINOR QUANTITIES OF FILL DIRT OF UNKNOWN ORIGIN MAY HAVE BEEN DUMPED BY ADJACENT SITE OWNERS.

3. 2-DOMESTIC (?) LANDFILLS IDENTIFIED RT, SEVERAL TIRES WERE OBSERVED IN CREEK, PRIMARILY DOWNSTREAM OF CROSSINGS

ALTA MESA MEMORIAL PARK

ASTM DESIGNATION: E 1528-93

STANDARD PRACTICE FOR ENVIRONMENTAL SITE ASSESSMENTS: TRANSACTION SCREEN PROCESS

Question	[✓ Owner]			Occupants (if applicable)			Observed During Site Visit		
1. Is the *property* or any *adjoining property* used for an industrial use?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
2. To the best of your knowledge, has the *property* or any *adjoining property* been used for an industrial use in the past?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
3. Is the *property* or any *adjoining property* used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	[✓ Yes]	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
4. To the best of your knowledge has the *property* or any *adjoining property* been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes	[✓ No]	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
5. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the *property* or at the facility?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
6. Are there currently, or to the best of your knowledge have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
7. Has *fill dirt* been brought onto the property that originated from a contaminated site or that is of an unknown origin?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
8. Are there currently, or to the best of your knowledge have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
9. Is there currently, or to the best of your knowledge has there been previously, any *stained soil on the property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
10. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*?	[✓ Yes]	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
11. Are there currently, or to the best of your knowledge have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property* or adjacent to any structure located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
12. Are there currently, or to the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
13. If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as *contaminated* by any government environmental/health agency?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
14. Does the *owner* or *occupant* of the *property* have any knowledge of *environmental liens* or governmental notification relating to past or recurrent violations of environmental laws with respect to the *property* or any facility located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	No	Unk
15. Has the *owner* or *occupant* of the *property* been informed of the past or current existence of *hazardous substances* or *petroleum products* or environmental violations with respect to the *property* or any facility located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	No	Unk
16. Does the *owner* or *occupant* of the *property* have any knowledge of any *environmental site assessment* of the *property* or facility that indicated the presence of *hazardous substances* or *petroleum products* on, or contamination of, the *property* or recommended further assessment of the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	No	Unk

FOOTHILL COLLEGE

ASTM DESIGNATION: E 1528-93

STANDARD PRACTICE FOR ENVIRONMENTAL SITE ASSESSMENTS: TRANSACTION SCREEN PROCESS

Question	Owner[7] *			Occupants (If applicable)			Observed During Site Visit		
1. Is the *property* or any *adjoining property* used for an industrial use?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
2. To the best of your knowledge, has the *property* or any *adjoining property* been used for an industrial use in the past?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
3. Is the *property* or any *adjoining property* used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	[✓ Yes] 1	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
4. To the best of your knowledge has the *property* or any *adjoining property* been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	[✓ Yes] 1	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
5. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the *property* or at the facility?	[✓ Yes] 2	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
6. Are there currently, or to the best of your knowledge have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	[✓ Yes]	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
7. Has *fill dirt* been brought onto the property that originated from a contaminated site or that is of an unknown origin?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
8. Are there currently, or to the best of your knowledge have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
9. Is there currently, or to the best of your knowledge has there been previously, any stained soil on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
10. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*?	[✓ Yes] 3	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
11. Are there currently, or to the best of your knowledge have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property* or adjacent to any structure located on the *property*?	[✓ Yes] 3	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
12. Are there currently, or to the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
13. If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
14. Does the *owner* or *occupant* of the *property* have any knowledge of *environmental liens* or governmental notification relating to past or recurrent violations of environmental laws with respect to the *property* or any facility located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
15. Has the *owner* or *occupant* of the *property* been informed of the past or current existence of *hazardous substances* or *petroleum products* or environmental violations with respect to the *property* or any facility located on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
16. Does the *owner* or *occupant* of the *property* have any knowledge of any *environmental site assessment* of the *property* or facility that indicated the presence of *hazardous substances* or *petroleum products* on, or contamination of, the *property* or recommended further assessment of the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk

FOOTHILL COLLEGE (cont'd)

Question	Owner[7] *			Occupants (If applicable)			Observed During Site Visit		
17. Does the *owner* or *occupant* of the *property* know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property* by any owner or occupant of the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
18. Does the *property* discharge waste water on or adjacent to the *property* other than storm water into a sanitary sewer system?	[✓ Yes] 4	No	Unk	Yes	No	Unk	[✓ Yes]	No	Unk
19. To the best of your knowledge, have any *hazardous substances* or *petroleum products*, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk
20. Is there a transformer, capacitor, or any *hydraulic equipment for which there are any* records indicating the presence of PCBs?	Yes	[✓ No]	Unk	Yes	No	Unk	Yes	[✓ No]	Unk

Government Records/Historical Sources Inquiry

(See guide, Section 10)

21. Do any of the following Federal government record systems list the property or any property within the circumference of the area noted below:			
National Priorities List—within 1.0 mile (1.6 Km)?	Yes	[✓ No]	
CERCLIS List—within 0.5 mile (0.8 Km)?	Yes	[✓ No]	
RCRA TSD Facilities—within 1.0 mile (1.6 Km)?	Yes	[✓ No]	
22. Do any of the following state record systems list the property or any property within the circumference of the area noted below:			
List maintained by state environmental agency of hazardous waste sites identified for investigation or remediation that is the state agency equivalent to NPL—within approximately 1.0 mile (1.6 Km)?	Yes	[✓ No]	
List maintained by state environmental agency of sites identified for investigation or remediation that is the state equivalent to CERCLIS—within 0.5 mile (0.8 Km)?	Yes	[✓ No]	
Leaking Underground Storage Tank (LUST) List—within 0.5 mile (0.8 Km)?	[✓ Yes]	No	
Solid Waste/Landfill Facilities—within 0.5 mile (0.8 Km)?	Yes	[✓ No]	
23. Based upon a review of *fire insurance maps* or consultation with the local fire department serving the *property*, all as specified in the guide, are any buildings or other improvements on the *property* or on an *adjoining property* identified as having *been used for an industrial use or uses likely to lead to contamination of the property*?	Yes	[✓ No]	N/A

The *preparer* of the *transaction screen questionnaire* must complete and sign the following statement. (For definition of "preparer" and "user," see 5.3 or 3.3.25.)

This questionnaire was completed by:
Name MARY BANNISTER
Title ENVIRONMENTAL GEOLOGIST
Firm TERRATECH, INC.
Address 1365 VANDER WAY
SAN JOSE, CA
Phone number 408 297 6969
Date

If the preparer is different than the user, complete the following:
Name of user
User's address
User's phone number
Preparer's relationship to site
Preparer's relationship to user (for example, principal, employee, agent, consultant)

Copies of the completed questionnaire have been filed at:

Copies of the completed questionnaire have been mailed or delivered to.

Preparer represents that to the best of the preparer's knowledge the above statements and facts are true and correct and to the best of the preparer's actual knowledge no material facts have been suppressed or misstated.

Signature Date
Signature Date
Signature Date

* MR. BILL SCHOOLER – FOOTHILL/DEANZA MAINTENANCE SUPERVISOR
MR. DAVE PAULSEN – ACTIVE SITE MANAGER

1. PAINT & VEHICLE MAINT. SHOPS ON THE PREMISES.

2. PAINT, MOTOR OIL, THINNER, ETC. STORED IN LOCKED STORAGE AREAS WITH SECONDARY CONTAINMENT, SEALED & LABELLED DRUMS.

3. PERMITTED FUEL TANK IN MAINT. YARD – 6,000 gal. underground gasoline

4. WASH PAD EFFLUENT COLLECTED, TREATED, DISPOSED INTO SAN. SEWER, PERMIT # POTW 2028.

APPENDIX G

NOTICE OF PREPARATION AND INITIAL STUDY

AND

RESPONSES TO NOTICE OF PREPARATION

NOTICE OF PREPARATION

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report

The Santa Clara Valley Water District (District) will be the Lead Agency and will prepare an Environmental Impact Report for the project identified below. The District needs to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project.

The project description, location, and the potential environmental effects are contained in the attached Notice of Preparation.

Due to the time limits mandated by State law, comments must be received by March 1, 1995.

Please send your responses to Terry A. Neudorf, Environmental Planner, Santa Clara Valley Water District, 5750 Almaden Expressway, San Jose, California 95118-3686 Tele: (408) 265-2607 ext 2695, Fax: (408) 268-7687. We will need the name of a contact person in your agency.

PROJECT TITLE:	Adobe Creek Watershed Project
PROJECT APPLICANT:	Santa Clara Valley Water District
PROJECT LOCATION:	Upper reach of Adobe Creek in Santa Clara County, California, as shown on the attached Figures 1 and 2.

Project Description:

The Santa Clara Valley Water District (District) proposes several flood and erosion control modifications to the upper reach of Adobe Creek, between El Camino Real and upstream of Moody Road in Santa Clara County, California.

Potential Environmental Impact Areas to be Addressed in the EIR:

The proposed project will result in both short-term impacts during construction, as well as long-term environmental impacts. The EIR will primarily address the following environmental issues: hydrology, vegetation and wildlife, cultural resources, geology, hazardous materials, drainage/water quality, visual and aesthetics, traffic, air quality, noise, property damage, and privacy and security. A brief discussion of these potential impacts is presented in the attached Notice of Preparation. A copy of the Initial Study is not attached to this Notice of Preparation.

Reference: California Administrative Code, Title 14, Sections 15082(a), 15103, and 15375

Date: January 16, 1995

Terry A. Neudorf
Environmental Planner

NOTICE OF PREPARATION
OF AN ENVIRONMENTAL IMPACT REPORT
for the proposed

ADOBE CREEK WATERSHED PROJECT
Santa Clara County, California
January 1995

Introduction

The purpose of an Environmental Impact Report (EIR) is to inform decision makers and the general public of the environmental effects of a proposed project. The EIR process is intended to provide public agencies with the environmental information required to evaluate a proposed project, establish methods for reducing adverse environmental impacts, and consider alternatives to a project prior to the approval of a proposed project.

Project Description

The Santa Clara Valley Water District (District) proposes several flood control and erosion repair modifications on Adobe Creek from El Camino Real to upstream of Moody Road, in Santa Clara County. The purpose of the project is to minimize flood hazards and erosion problems at specific locations along Adobe Creek. Adobe Creek flows to San Francisco Bay from the foothills through the cities of Los Altos Hills, Los Altos, Palo Alto, and Mountain View. The location of the proposed project is shown on Figure 1. The proposed project includes construction of the specific flood control and erosion control features described below. The affected portion of Adobe Creek has been divided into 16 reaches to assist in the location of the proposed modifications, as shown in Figure 2.

The primary modifications are proposed in reaches 1, 5, 7, 8, 9 ,11 and 13, as described below. Only minor modifications to Adobe Creek are proposed in reaches 2, 3, 4, 6, 10, 12, 14, 15, and 16.

El Camino Real to Upstream of Hetch Hetchy Pipeline (Reach 1):

The project proposes to replace the existing culvert under El Camino Real with a culvert that can accommodate a 100-year flood event, and rebuild the upstream transition between the culvert and the creek bed.

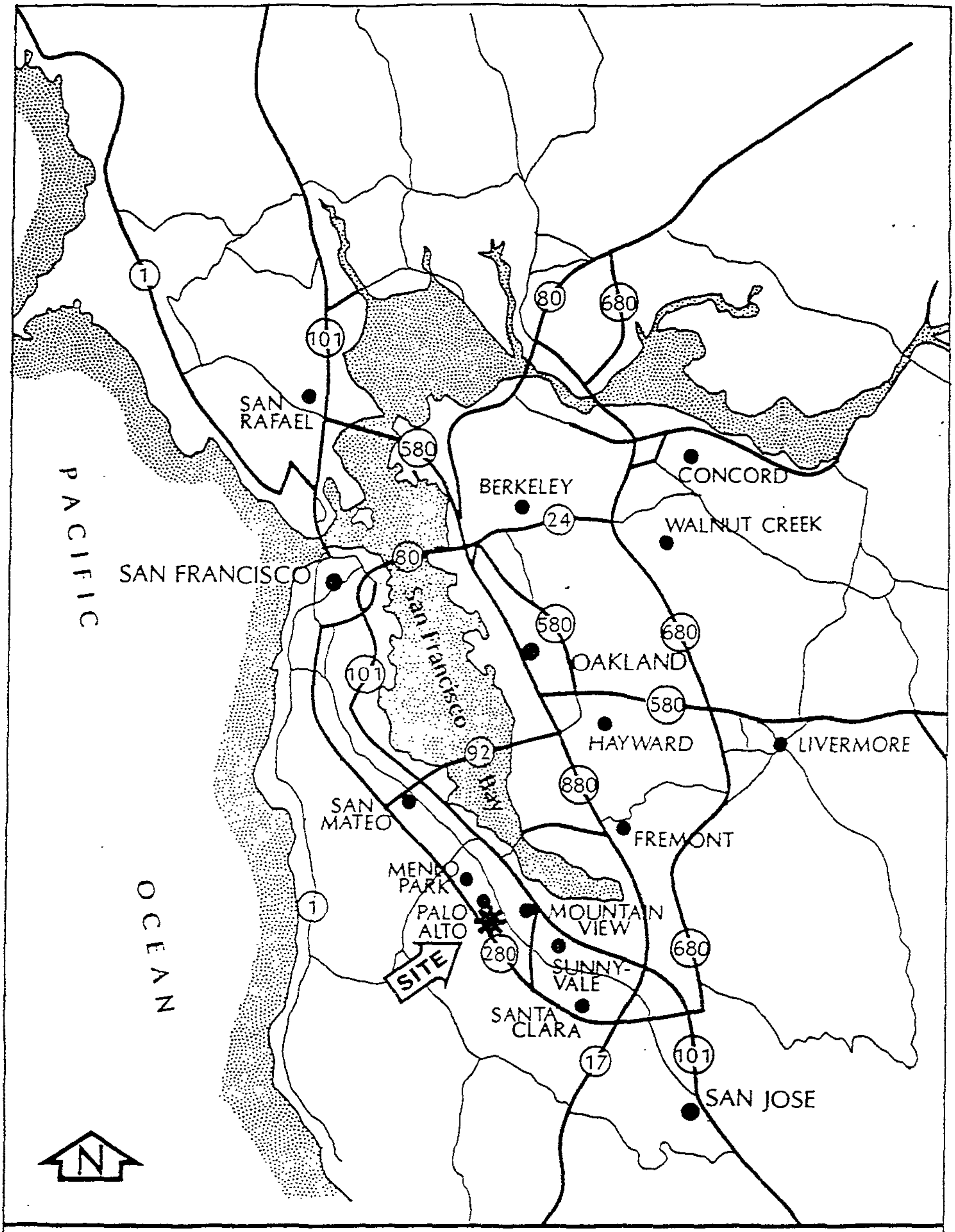
Foothill Expressway to West Edith Avenue (Reach 5):

The project proposes to install an additional 12 foot by 12 foot box culvert directly to the right[1] of the existing culvert, under Foothill Expressway, as well as rebuilding the upstream and downstream transition structures.

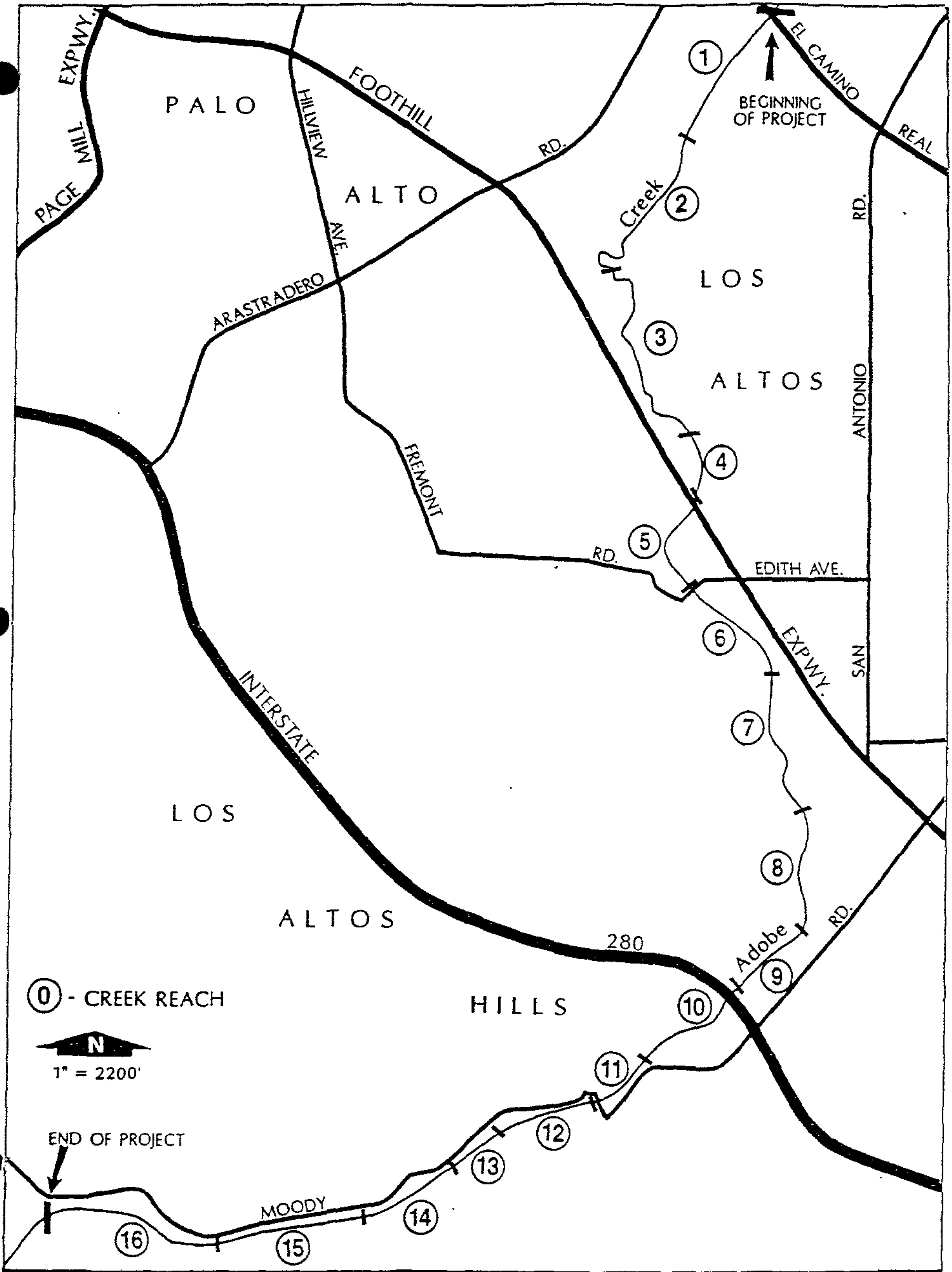
The project will widen the existing channel, install gabions on one bank, install rock riprap on the other bank and on the channel bottom (invert), and excavate a broad earthen floodbench on the right bank for 860 feet downstream of West Edith Avenue.

---

[1] References to right and left bank are oriented looking upstream.



REGIONAL MAP FIGURE 1



VICINITY MAP FIGURE 2

Burke Road to O'Keefe Lane (Reaches 7-8):

The project proposes to replace the crossing at Burke Road with one that can accommodate a 100-year flood event. The replacement will consist of a double 12 foot by 10 foot box culvert, and reconstruction of the upstream and downstream transition structures.

O'Keefe Lane to Interstate 280 (Reach 9):

The channel modifications in this reach consist of replacing the culvert at O'Keefe Lane with a culvert that can accommodate a 100-year flood event, and reconstructing the upstream and downstream transitions to the new culvert.

Foothill College Entrance Road to El Monte Road (Reach 11):

The proposed channel modifications in this reach consist of constructing a widened channel with gabions lining the banks and rock riprap on the channel bottom. The proposed limits of excavation extend partially up the right bank and up the left bank to the Foothill College parking lot.

Tepa Way to Ridge Rhus Road (Reach 13):

The project proposes to modify the existing entrance structure to the bypass channel located 400 feet upstream of Tepa Way.

Other Modifications

In addition to the modifications listed above, the proposed project includes 20 small bank erosion control projects (less than 100-150 feet in length). The location, length, and type of proposed erosion control measure for each of the sites will be described in the EIR.

The project also includes adoption of a General Maintenance Program for Adobe Creek, which will identify a continuous corridor for long-term maintenance. The maintenance program will describe specific bank stabilization techniques for varying degrees and types of future erosion problems.

The project includes new and/or improved access and maintenance ramps at the following four locations along the upstream reach of Adobe Creek: 1) Alta Mesa Cemetery, 2) Raquel Court, 3) downstream of West Edith Avenue, and 4) upstream of Foothill College entrance.

The proposed project includes environmental review for two deferred bridge/culvert replacements: 1) Yerba Buena Avenue Bridge, and 2) Tepa Way culvert. These measures are not included in the scheduled construction. The District will participate as a cost-shared partner, if the bridges are replaced by another party for traffic or structural reasons.

Potential Environmental Effects of the Project

The proposed project will result in both short-term impacts during construction, as well as long-term environmental impacts. The EIR will primarily address the following environmental issues: hydrology, biology, cultural resources, geology, hazardous materials, drainage/water quality, visual and aesthetics, traffic, air quality, noise, property damage, and privacy and security. A brief discussion of these potential impacts is presented below.

1. *Hydrology*

The EIR will describe the need for the project and the effect of the project on the existing hydrology of Adobe Creek.

2. *Biology*

The project will alter the natural conditions of the creek channel and could result in the loss of riparian vegetation and associated biotic resources, including fisheries and wildlife habitat. The EIR will quantify the extent of riparian vegetation impacted by the project and the potential for impacts to fisheries and special status species of plants and animals. Mitigation measures will be identified for potentially significant vegetation, fisheries and wildlife impacts.

3. *Cultural Resources*

The project site may contain archaeological resources that could be uncovered or disturbed during excavation for the project, resulting in potential cultural resource impacts. The EIR will address the potential for impacts to archaeological resources on the project site, based upon an archaeological investigation. Mitigation measures will be identified in the EIR for potentially significant impacts to cultural resources.

4. *Geology*

The site is located within a seismically active region and could be subject to strong groundshaking. The EIR will describe potential geologic constraints, such as unstable slopes and seismic hazards that may exist along the Adobe Creek channel in areas proposed for flood control modifications. Mitigation measures will be identified in the EIR for potentially significant geologic impacts.

5. *Hazardous Materials*

The potential for hazardous materials to be uncovered during construction in the Adobe Creek channel will be addressed in the EIR, which will include the results of a creekbed sediment sampling for EPA priority contaminants. The EIR will also describe the types of herbicides proposed to be used by the District maintenance program and any potentially significant impacts related to the use of the herbicides. Mitigation measures will be identified in the EIR for potentially significant hazardous materials impacts.

6. *Drainage/Water Quality*

Grading and earthwork during construction of the flood modifications could result in erosion and sedimentation into the Adobe Creek channel. The potential project impacts to water quality and drainage will be addressed in the EIR. Mitigation measures will be identified for potentially significant water quality impacts.

7. *Visual/Aesthetics*

The project will result in alterations to the existing creek channel. The EIR will describe the visual characteristics and aesthetics of the project areas, and assess the potential for the project to affect views or result in visual intrusiveness upon surrounding sites. Mitigation measures will be identified in the EIR to reduce or avoid significant visual impacts.

8. *Traffic*

The EIR will address potential temporary vehicular circulation impacts that will occur during project construction. The EIR will also address impacts to pedestrians that may result from the closure of sidewalks during construction of the project. Mitigation measures will be identified for potentially significant impacts. The EIR will also describe the potential socio-economic impacts that may result in the vicinity of the project, such as potential short-term impacts upon businesses in the vicinity of project construction.

9. *Air Quality*

The EIR will describe the potential temporary air quality impacts that will result from construction of the proposed project including dust and vehicular pollution emissions. Mitigation measures will be identified for potentially significant air quality impacts.

10. *Noise*

Construction of the project will result in temporary noise impacts to surrounding land uses. The EIR will describe the project's potential for short-term noise impacts and will identify mitigation measures for potentially significant noise impacts.

11. *Property Damage*

Construction of the project may result in potential damage to homes and property adjacent to the project, from pile driving and other earthwork, including damage to the foundations of homes, swimming pools, fencing, landscaping and yards. The potential for property damage will be discussed in the EIR, and mitigation measures will be identified for potentially significant impacts.

12. *Privacy and Security*

The project may result in short-term privacy and security impacts on adjacent homes during the construction phase, when fences and other property barriers are removed. The EIR will address the potential for short-term privacy and security impacts, including the potential impact of pets escaping from backyards during construction. Possible mitigation measures, such as temporary fencing for security, will be identified in the EIR.

Project Alternatives

The EIR will include a comparative analysis of overall project alternatives, as well as alternative measures within specific reaches of the project, as described below:

West Edith Avenue (Reach 5)

1) *Earthen Channel and Floodbench Alternative:* construction of a wider earthen channel with a revegetated flood bench; and

2) *Bypass Channel Alternative:* construction of a bypass culvert under Fremont Road.

Foothill College (Reach 11)

Earthen Channel and Floodbench Alternative: construction of a wider earthen channel with a revegetated flood bench.

ENVIRONMENTAL SIGNIFICANCE CHECKLIST

This checklist was used to identify physical, biological, social, and economic factors which might be impacted by the proposed project. In many cases, the background studies performed in connection with this project clearly indicate that the project will not affect a particular item. A "NO" answer in the first column documents this determination. All items marked "YES" will be discussed in the EIR.

ENVIRONMENTAL CHECKLIST	No Impact	Yes			Information Sources
		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	
I. **LAND USE AND PLANNING** Would the proposal:					
a) Conflict with general plan designation or zoning?	☒	☐	☐	☐	1
b) Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?	☐	☐	☐	☒	1
c) Be incompatible with existing land use in the vicinity?	☐	☐	☐	☒	1
d) Affect agricultural resources or operations (e.g. impacts to soils or farmlands, or impacts from incompatible land uses)?	☒	☐	☐	☐	1
e) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community?	☒	☐	☐	☐	1
II. **POPULATION AND HOUSING.** Would the proposal:					
a) Cumulatively exceed official regional or local population projections?	☒	☐	☐	☐	1
b) Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure?	☒	☐	☐	☐	1
c) Displace existing housing, especially affordable housing?	☒	☐	☐	☐	1

ENVIRONMENTAL CHECKLIST	No Impact	Yes Potentially Significant Impact	Yes Potentially Significant Unless Mitigation Incorporated	Yes Less Than Significant Impact	Information Sources
III. GEOLOGIC PROBLEMS. Would the proposal result in or expose people to potential impacts involving:					
a) Fault rupture?	☒	☐	☐	☐	1
b) Seismic ground shaking?	☐	☐	☐	☒	1
c) Seismic ground failure, including liquefaction?	☐	☐	☐	☒	1
d) Seiche, tsunami, or volcanic hazard?	☒	☐	☐	☐	1
e) Landslides or mudflows?	☒	☐	☐	☐	1
f) Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?	☐	☐	☐	☒	1
g) Subsidence of the land?	☒	☐	☐	☐	1
h) Expansive soils?	☒	☐	☐	☐	1
I) Unique geologic or physical features?	☒	☐	☐	☐	1
IV. WATER. Would the proposal result in:					
a) Changes in the absorption rates, drainage patterns, or the rate and amount of surface runoff?	☐	☐	☐	☒	1
b) Exposure of people or property to water related hazards such as flooding?	☒	☐	☐	☐	1,3,5
c) Discharge into surface waters or other alteration of surface water quality (e.g. temperature, dissolved oxygen or turbidity)?	☐	☐	☒	☐	1,2,3,5
d) Changes in the amount of surface water in any water body?	☒	☐	☐	☐	1,3
e) Changes in currents, or the course or direction of water movements?	☐	☐	☐	☒	1,3

ENVIRONMENTAL CHECKLIST	No Impact	Yes Potentially Significant Impact	 Potentially Significant Unless Mitigation Incorporated	 Less Than Significant Impact	Infor-mation Sources
f) Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability?	☒	☐	☐	☐	1
g) Altered direction or rate of flow of groundwater?	☒	☐	☐	☐	1
h) Impacts to groundwater quality?	☒	☐	☐	☐	1,3
I) Substantial reduction in the amount of groundwater otherwise available for the public water supplies?	☒	☐	☐	☐	1
V. AIR QUALITY. Would the proposal:					
a) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☐	☒	1,3
b) Expose sensitive receptors to pollutants?	☐	☐	☐	☒	1,3
c) Alter air movement, moisture, or temperature or cause any change in climate?	☒	☐	☐	☐	1
d) Create objectionable odors?	☒	☐	☐	☐	1
VI. TRANSPORTATION/CIRCULATION Would the proposal result in:					
a) Increased vehicle trips or traffic congestion?	☐	☐	☐	☒	1
b) Hazards to safety from design features (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☒	☐	☐	☐	1
c) Inadequate emergency access or access to nearby uses?	☒	☐	☐	☐	1
d) Insufficient parking capacity on-site or off-site?	☒	☐	☐	☐	1
e) Hazards or barriers for pedestrians or bicyclists?	☐	☐	☐	☒	1

ENVIRONMENTAL CHECKLIST	No Impact	Yes: Potentially Significant Impact	Yes: Potentially Significant Unless Mitigation Incorporated	Yes: Less Than Significant Impact	Information Sources
f) Conflicts with adopted policies supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	☒	☐	☐	☐	1
g) Rail, waterborne or air traffic impacts?	☒	☐	☐	☐	1
VII. BIOLOGICAL RESOURCES Would the proposal result in impacts to:					
a) Endangered, threatened or rare species or their habitats (including but not limited to plants, fish, insects, animals and birds)?	☒	☐	☐	☐	2
b) Locally designated species (e.g. heritage trees)?	☐	☐	☒	☐	2
c) Locally designated natural communities (e.g. oak forest, coastal habitat etc.)?	☐	☐	☐	☒	2
d) Wetland habitat (e.g. marsh, riparian and vernal pool)?	☒	☐	☐	☐	2
e) Wildlife dispersal or migration corridors?	☒	☐	☐	☐	2
VII. ENERGY AND MINERAL RESOURCES Would the proposal:					
a) Conflict with adopted energy conservation plans?	☒	☐	☐	☐	1
b) Use non-renewable resources in a wasteful and inefficient manner?	☒	☐	☐	☐	1
c) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the state?	☒	☐	☐	☐	1
IX. HAZARDS. Would the proposal involve:					
a) A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil pesticides, chemicals or radiation)?	☐	☐	☐	☒	1,5

ENVIRONMENTAL CHECKLIST	No Impact	Yes: Potentially Significant Impact	Yes: Potentially Significant Unless Mitigation Incorporated	Yes: Less Than Significant Impact	Information Sources
b) Possible interference with an emergency response plan or emergency evacuation plan?	☒	☐	☐	☐	1
c) The creation of any health hazard or potential health hazard?	☒	☐	☐	☐	1
d) Exposure of people to existing sources of potential health hazards?	☒	☐	☐	☐	1
e) Increased fire hazard in areas with flammable brush, grass or trees?	☒	☐	☐	☐	1
X. NOISE. Would the proposal result in:					
a) Increases in existing noise levels?	☐	☐	☐	☒	1,3
b) Exposure of people to severe noise levels?	☐	☐	☐	☒	1,3
XI. PUBLIC SERVICES. Would the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:					
a) Fire protection?	☒	☐	☐	☐	1
b) Police protection?	☒	☐	☐	☐	1
c) Schools?	☒	☐	☐	☐	1
d) Maintenance of public facilities, including roads?	☒	☐	☐	☐	1
e) Other governmental services?	☒	☐	☐	☐	1
XII. UTILITIES AND SERVICE SYSTEMS. Would the proposal result in a need for new systems or supplies, or substantial alterations to the following utilities:					
a) Power or natural gas?	☒	☐	☐	☐	1
b) Communications systems?	☒	☐	☐	☐	1

ENVIRONMENTAL CHECKLIST	No Impact	Yes: Potentially Significant Impact	Yes: Potentially Significant Unless Mitigation Incorporated	Yes: Less Than Significant Impact	Information Sources
c) Local or regional water treatment or distribution facilities?	☒	☐	☐	☐	1
d) Sewer or septic tanks?	☒	☐	☐	☐	1
e) Storm water drainage?	☒	☐	☐	☐	1
f) Solid waste disposal?	☒	☐	☐	☐	1
g) Local or regional water supplies?	☒	☐	☐	☐	1
XIII. AESTHETICS. Would the proposal:					
a) Affect a scenic vista or scenic highway?	☒	☐	☐	☐	1
b) Have a demonstrable negative aesthetic effect?	☐	☐	☐	☒	1
c) Create light or glare?	☒	☐	☐	☐	1
XIV. CULTURAL RESOURCES. Would the proposal:					
a) Disturb paleontological resources?	☒	☐	☐	☐	4
b) Disturb archaeological resources?	☐	☒	☐	☐	4
c) Affect historical resources?	☒	☐	☐	☐	4
d) Have the potential to cause a physical change which would affect unique ethnic cultural values?	☒	☐	☐	☐	4
e) Restrict existing religious or sacred uses within a potential impact area?	☒	☐	☐	☐	4
XV. RECREATION. Would the proposal:					
a) Increase the demand for neighborhood or regional parks or other recreational facilities?	☒	☐	☐	☐	1
b) Affect existing recreational opportunities?	☒	☐	☐	☐	1

ENVIRONMENTAL CHECKLIST	No Impact	Yes Potentially Significant Impact	Yes Potentially Significant Unless Mitigation Incorporated	Yes Less Than Significant Impact	Information Sources
XVI. MANDATORY FINDINGS OF SIGNIFICANCE.					
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animals community, reduce the number or range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐	1,2,3,5
b) Does the project have the potential to achieve short-term, to the disadvantage of long-term environmental goals?	☐	☐	☒	☐	1,2,3
c) Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☒	☐	☐	1,2,3,5
d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒	1,3

Reproduced from Adopted Amendments to the State CEQA Guidelines, 1994

INFORMATION SOURCES:

1. Professional judgment and expertise of environmental specialist preparing this assessment, based upon a review of the site and surrounding conditions, as well as a review of the project plans.
2. Adobe Creek Planning Study Impact and Mitigation Analysis (H.T. Harvey and Associates, July 18, 1994).
3. Formulation of Alternatives (Santa Clara Valley Water District, 1994).
4. Cultural Resources Evaluation (Archaeological Resource Management, 1994).
5. Maintenance Program (SCVWD, 1994).

Comments
on
Notice
of
Preparation

CITY OF LOS ALTOS
One North San Antonio Road
Los Altos, California 94022-3088
Tel: (415) 948-1491
Fax: (415) 941-7419

February 13, 1995

2/15 orig TANeudorf w/a
BH Boldner

Terry A. Neudorf, Environmental Planner
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Re: Adobe Creek Watershed Project

Dear Terry Neudorf:

The City has reviewed the Notice of Preparation of a Draft Environmental Impact Report for the above project. The twelve items to be addressed seem relatively complete, and the City requests the inclusion of the following additional items:

1. Discussion of consistency of the project with local agency's General Plans. A copy of the City's General Plan and a portion of the City's municipal code affecting construction/work along Adobe Creek are enclosed.

2. A Mitigation Monitoring Program.

3. In reference to Item #7 Visual/Aesthetics, discussion of alternative construction materials that may restore the creek to reasonably natural aesthetics (ie; gabions, rip-rap).

When the Draft Environmental Impact Report is completed please forward 2 copies to the City's contact for this project, Landy A. Darrow, Project Engineer. If you have any questions, she can be reached at 415-948-1491, extension 230.

Sincerely,

Bruce Bane

Bruce Bane
Director of Public Works

enclosures(2)

cc: Carol Hoffman, Planning Director
Layne Long, Environmental Task Force

LOS ALTOS
GENERAL PLAN
1987–2005

ADOPTED OCTOBER 20, 1987

Amended by:
Resolutions 89-9, 89-46, 90-25, 90-44, 91-13, 91-24
89-47 90-39A 93-35
93-36 94-4

9. NATURAL ENVIRONMENT & HAZARDS

This chapter covers safety, as prescribed by Safety Element provisions of the Government Code, Section 65302(g); noise, as covered by Noise Element guidelines of the Government Code, Section 65302(f); and air quality, which is part of the state mandated Conservation Element, Section 65302(d).

Los Altos seeks to protect the community from unreasonable risks associated with the effects of seismic events—surface rupture, ground shaking, ground failure, and dam failure—flooding and slope instability. The City further desires to minimize the public health hazards of noise and air pollutants. The dominant theme of this chapter is to **protect the community from injury, loss of life, property damage, and deteriorating quality of life resulting from natural catastrophes, other hazardous conditions, and pollutants.**

It is impossible to remove all risks associated with each specific type of hazard, but the intent is to reduce risks to life and property and to make informed decisions about land use and development near hazards or affected by them.

Maps referred to in this chapter are found in the Technical Appendix or are available from the City's planning department. The Development Constraints Diagram which shows floodways, areas with slopes over 15 percent, and fault lines in or near the city is available at two scales. The diagram using a scale of 1" = 1000' is included in the map pocket of the General Plan. The diagram at a scale of 1" = 500' is available for viewing at the City's planning department.

EMERGENCY PREPAREDNESS

The first line of defense against any catastrophe is to avoid threatening situations and to prepare disaster response plans that will minimize the harmful impacts. Quick action in the event of an emergency will reduce the probability of additional injuries and damage.

Government disaster preparedness planning efforts are handled primarily by the fire and police departments, as well as by the County Office of Emergency Services. The County and each city are required to prepare disaster plans in accordance with State regulations, to assign duties for emergency response, to designate an emergency operations center and emergency shelters, and to establish an emergency broadcast system.

Part of a disaster response plan is identification of those facilities that will be relied upon in the event of a catastrophe. Critical facilities are hospitals; fire stations; police stations; the emergency operations center; gas, electric, and water lines; and ambulance services.

The City has appointed a Community Emergency Preparedness Committee to work with the City staff to prepare and adopt an emergency preparedness plan. The City staff is responsible for implementing the plan.

FLOOD HAZARDS

Flood hazards fall into three categories: **natural flooding, dam inundation,** and **mud and debris flows.**

Natural flooding results from major rainstorms that cause overflows of stream courses, and may be aggravated by inadequacies in local storm drain facilities. Portions of the four creeks flowing through Los Altos have been channelized to increase the capacity of the creeks to reduce flooding and to permit development of the flood plain.

Unfortunately, flood control and preservation of natural resources are often in conflict, and further channelization is not recommended for any of the creeks in Los Altos. The alternative to channel modification is to require setbacks for development, annual removal of debris from channels, and bank stabilization using natural vegetation.

Adobe Creek is the most flood-prone of Los Altos creeks. The Santa Clara Valley Water District has requested the City to require setbacks along the creek and to require property owners to dedicate an easement or fee title to the District. Conservation easements of 40'–80' between O'Keefe Lane and Redwood Grove are required through any future development.

Dam inundation could occur with the failure of the Stevens Creek Dam. *Mud and debris flows* originate in hillside areas having deep top soils with poor drainage characteristics. Most of Los Altos, being on fairly level terrain, is not subject to this hazard.

FEMA requirements. The Federal Emergency Management Agency (FEMA) administers a national program to provide flood insurance to property owners within flood hazard areas. In order to qualify for the program, communities must file an application and adopt minimum land use and flood control measures for new construction. FEMA prepares flood insurance rate maps that identify flood zones and areas susceptible to 100- and 500-year floods. These maps are the basis for the flood constraints shown on the Development Constraints Diagram.

SEISMIC AND GEOLOGIC HAZARDS

Los Altos is located in one of the most earthquake prone areas of the world, near the major San Andreas fault zone. Earthquakes are the product of the build-up and sudden release of strain along a "fault"—or zone of weakness—in the earth's crust. Earthquakes originate as shock waves generated by movement along an active fault. Seismic hazards include ground shaking and the potential for ground rupture, liquefaction, settlement, landslides, tsunami (tidal waves) and seiches (oscillating waves in enclosed water bodies).

Los Altos lies between the active San Andreas and Hayward faults, as well as numerous smaller faults. None of the surface traces actually traverse Los Altos, but ground shaking from any of these faults could damage buildings and cause objects to fall, producing secondary hazards to life and property. Seismically hazardous buildings, defined as "all public and private buildings intended for human habitation, except buildings having 5 living units or less, constructed prior to enactment of local codes requiring earthquake resistant design and constructed with unreinforced masonry bearing walls," should be identified (by January 1, 1990) and programs should be enacted to mitigate the hazard.

Los Altos sits on the very deep alluvial soils of the Santa Clara Valley floor. These soils, consisting of silt, clay, sand, and gravel deposits, extend to a depth of 4,000 to 5,000 feet throughout most of the city. Although severe ground motion resulting from an earthquake would be apparent in Los Altos because of the depth of the loosely consolidated soils, damage generally would not be serious to one- or two-story wood frame structures. No active faults traverse the city, which would call for special prohibitions against development. Tsunami—tidal waves associated with the earthquakes—would not affect Los Altos, the city being located five to six miles from the Bay with an elevation of 150 feet or more above sea level.

SOILS AND SLOPE STABILITY

Landslides are most likely in hillside locations under conditions where (1) rock strata parallels surface slopes; (2) high clay content absorbs excess water; (3) displacement has fractured a fault zone; or (4) the base of a slope has been removed by erosion or people.

Erosion and land slippage present no hazard on flat land. East of Foothill Expressway, slopes are 0 to 3 percent except where the creeks cut through soft soils. West of the expressway, the terrain is more varied, with some slopes over 15 percent. The extensive landscaping around virtually every house minimizes the moderate erosion potential of some of the soils. Only where land has been cleared of all vegetation, typically during construction, is erosion a threat.

Similarly, landslides are unlikely where slopes are less than 15 percent. There are no recent examples of landslides in the Los Altos Sphere of Influence. The Development Constraints Diagram shows areas where slopes are likely to exceed 15 percent. Development within these areas should be carefully reviewed for mitigation of landslide risks.

NOISE

Noise is generally defined as unwanted sound—unwanted being dependent on when and where the sound occurs, what the listener is doing, characteristics of the sound, and how intrusive it is above background sound levels. Noise hazards are a function of increasing mechanization, the noise being principally produced by machines for transportation and production. In Los Altos, traffic movement on the city's road system is the predominant source of noise.

Noise levels are measured on a logarithmic scale in decibels which are then weighted and added over a 24-hour period to reflect not only the magnitude of the sound but also its duration, frequency, and time of occurrence. In this manner, various acoustical scales and units of measurement have been developed such as equivalent sound levels (L_{eq}), day-night average sound levels (L_{dn}), and Community Noise Equivalent Levels (CNEL).

These measurements become the basis for setting acceptable standards at sensitive noise receptors and identifying potential noise generators. The State of California Office of Noise Control, in its Land Use Compatibility Standards table (Figure 9-1, page 138), defines an outdoor level of L_{dn} 60 dBA or less as being "normally acceptable" for residential uses, schools, libraries, churches, and hospitals. This standard also intends to provide for interior noise levels no greater than 45 dBA (L_{dn}), which is generally accepted as the maximum acceptable noise level for most indoor residential activities. Maximum noise exposure levels acceptable in Los Altos are consistent with the standards in Figure 9-1.

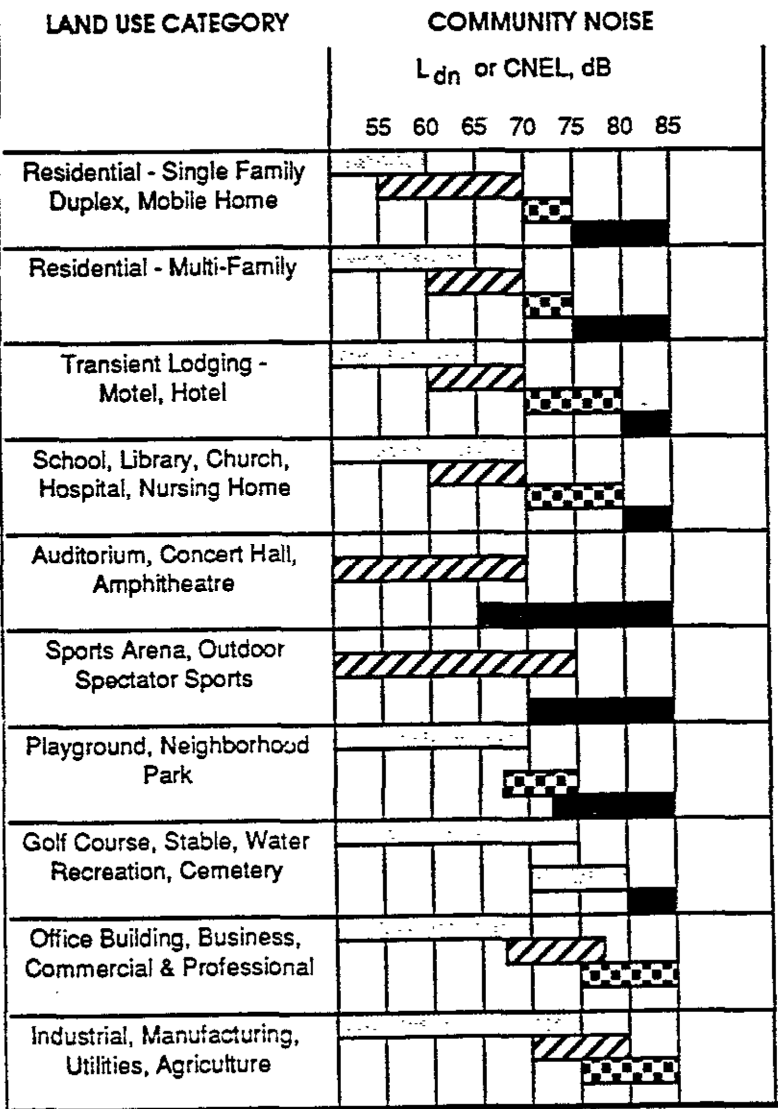
In 1974, the State adopted Noise Insulation Standards (Chapter 2-35 of Title 24, State Code) for new hotels, motels, and dwellings other than single family detached dwellings. Those standards established 45 dBA (L_{dn}) as the maximum interior sound level (attributable to exterior sources) in any room. Where exterior sound levels are 60 dBA (L_{dn}) or above, acoustical analyses for projects are required to ensure that the structure has been designed to limit outside noise to the allowable interior levels. Title 24 also includes standards to be met for sound transmission between units. Multi-family attached units must incorporate noise reduction features sufficient to assure that interior noise levels in all habitable rooms do not exceed 45 dBA. One of the purposes of requiring noise elements in local general plans is to help implement these interior insulation regulations by identifying where special remedial measures are required.

EXISTING NOISE SOURCES IN LOS ALTOS

Noise emanates from stationary and from mobile sources. Fixed sources include construction, refrigeration units, radio or television, loud speakers, power tools (including leaf blowers), and animals. Mobile noise sources typically are transportation related. In Los Altos, motor vehicles on the city's roadway system are the major source of continuous noise.

The State's planning laws require identification of areas exposed to high noise levels. "Noise exposure areas" are defined as those areas where noise levels exceed 60 dBA (L_{dn}). In Los Altos, these noise expo-

FIGURE 9 - 1: LAND USE COMPATIBILITY STANDARDS



INTERPRETATION

☐ NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

▨ CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

▦ NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

■ CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken

Noise Source Characteristics

The land use - noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic, but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment.

Suitable Interior Environments

One objective of locating [both single and multi-family] residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL or Ldn. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

Source: State Of California, Office of Noise Control, 1975 sure areas exist along some collector streets, minor arterials, and principal arterials with high traffic volumes and relatively high speeds. The distance from the road centerline to points at which noise levels are 70, 65, and 60 dBA have been calculated from the Average Daily Traffic (ADT) for arterials and collectors throughout Los Altos.

A population of 16,276, residing in a total of 5,915 dwelling units, was exposed to noise levels exceeding 60 dBA along major traffic arterials in 1986. As traffic increases over the life of this Plan, 6,907 dwelling units with a population of 17,521 may be exposed to these high noise levels. (See Figure 9-2, above.) The noise contours from which these numbers were derived are shown in Figures 9-3 and 9-4 (pages 140 and 141) and are available for viewing at a scale of 1" = 500' at the City's planning department.

FIGURE 9 - 2: COMPARISON OF POPULATION NOISE EXPOSURE LEVELS

	60–65 dBA L_{dn}/CNEL	65–70 dBA L_{dn}/CNEL	More than 70 dBA L_{dn}/CNEL
EXISTING (1986)			
Dwelling Units	4,552	1,021	342
Residents	12,571	2,770	935
BUILD-OUT OF PROPOSED GENERAL PLAN[1]			
Dwelling Units	5,015	1,398	494
Residents	12,686	3,607	1,228

[1] The noise-dampening effect of sound-walls proposed along Highway I-280 and Highway SR 85 has not been taken into account in these figures.

Source: DKS Associates, Geoff Hornek Noise Consulting, and Knox & Associates, 1987.

No commercial or industrial uses have been identified to be major on-going noise sources for which noise contours need to be prepared.

PROJECTED FUTURE NOISE SOURCES

Growth in and near Los Altos will generate increased traffic volumes and thereby increase the exposure to high noise levels. The number of persons affected is shown below.

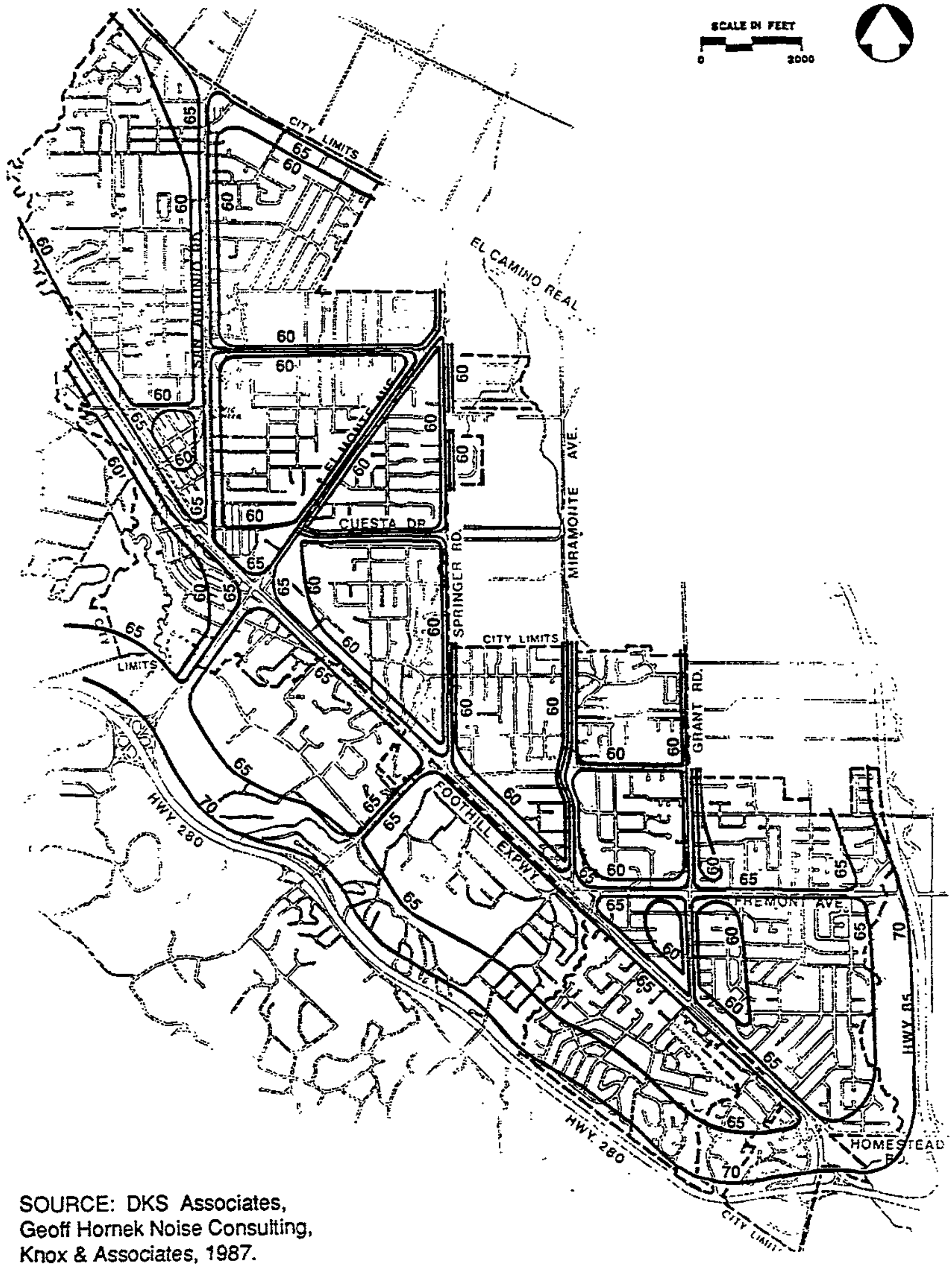
Land use planning, with appropriate noise reduction mitigation, will establish land use, site, and building design acceptable for new development adjacent to major roadways. Acoustic architectural design, involving site plans, building heights, room arrangements, window size, balcony and courtyard design, and acoustic construction, involving treatment of various parts of a building to reduce interior noise levels, shall be considered in mitigating noise hazards at new developments.

Noise barriers should be considered when the above mitigations are infeasible. Ideally, noise barriers will incorporate berms, walls, and appropriate landscaping to reduce the visual impact of the sound walls.

AIR QUALITY

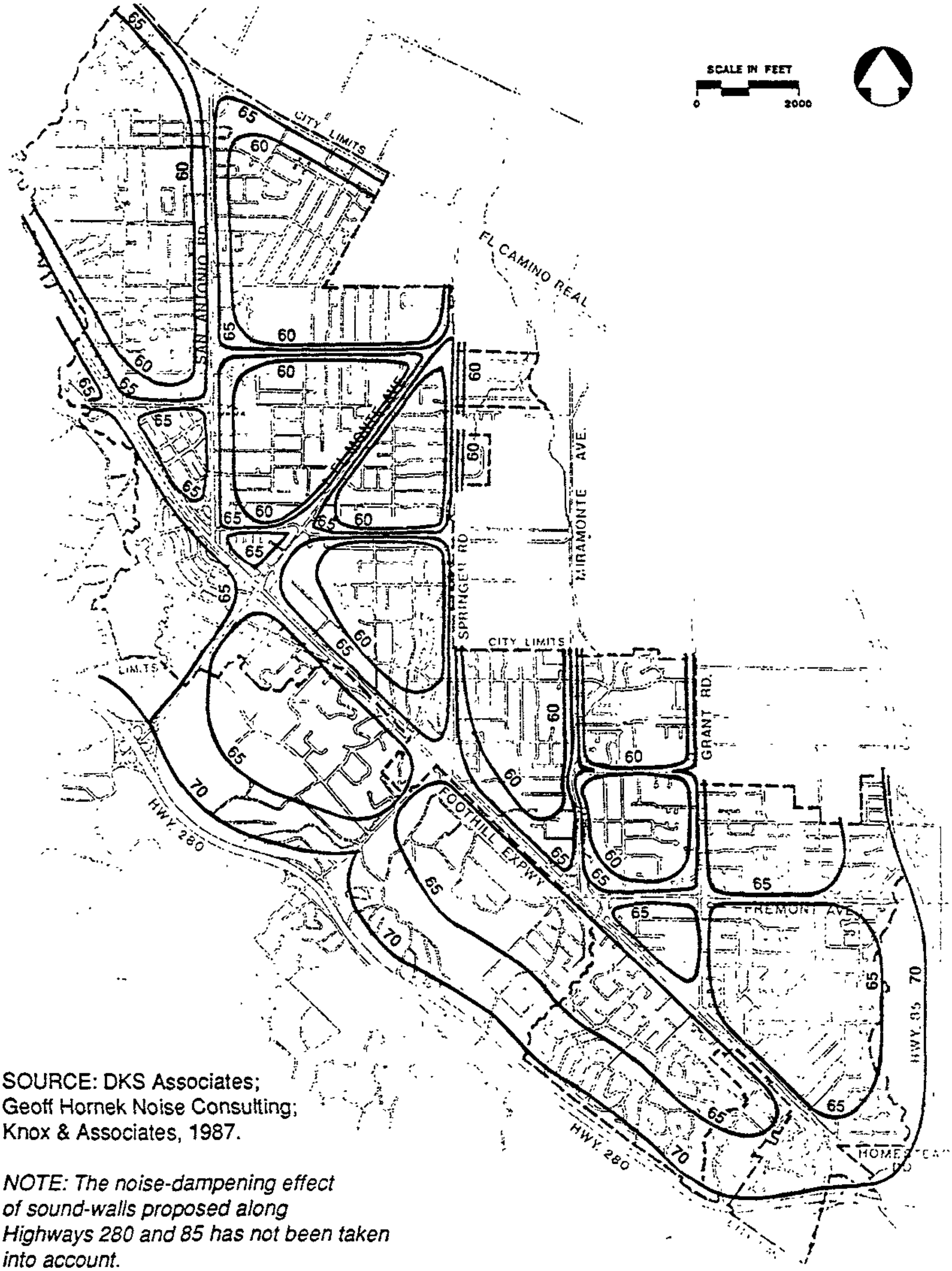
The generation of air pollutants—which degrade the air quality and can pose a significant health hazard—is closely linked to land use, transportation, and energy use planning. Daily automobile travel from suburban areas to the employment centers of

FIGURE 9 - 3: EXISTING NOISE CONTOURS, 1987



SOURCE: DKS Associates,
Geoff Hornek Noise Consulting,
Knox & Associates, 1987.

FIGURE 9 - 4: NOISE CONTOURS—BUILD-OUT OF PROPOSED GENERAL PLAN



SOURCE: DKS Associates;
Geoff Hornek Noise Consulting;
Knox & Associates, 1987.

NOTE: The noise-dampening effect of sound-walls proposed along Highways 280 and 85 has not been taken into account.

Santa Clara County is the primary cause of air pollution in the subregion. Planning that can reduce the overall vehicle miles traveled (VMT) will also reduce the amount of air pollutants generated. In addition, air movement patterns in the Bay Area carry air pollutants from north to south. The Santa Clara Valley thereby receives the accumulated air pollution from its neighbors to the north.

The Bay Area experienced 5 days of ozone non-attainment in 1986. (This compares to 174 days of non-attainment in Los Angeles.) The monitoring station in Mountain View near Los Altos registered *only one day of ozone non-attainment* in 1986. Not complying with federal standards means that after December 31, 1987, the Environmental Protection Agency (EPA) will (1) cease funding for cleaning-up of air pollution, (2) ban construction of wastewater treatment facilities (to slow population growth), and (3) cease highway funding—unless federal legislation is changed.[1]

High demand for energy because of inefficiencies in space heating and electricity use also creates pollutants. Los Altos—being a receiver of air pollutants from the entire Bay region—cannot solve the regional air quality problem. Through appropriate land use, transportation, and energy use planning, however, the City can participate in the most feasible remedies.

Air quality is managed by the regional Bay Area Air Quality Management District (BAAQMD). The goal of air quality regulatory agencies is attainment of ambient air quality standards. The 1982 Bay Area Air Quality Plan seeks to control stationary and mobile sources of air pollution in order to meet these standards. In keeping with the plan, Los Altos will not allow any development which would (1) singly or cumulatively violate any State ambient air quality standard; (2) generate a significant amount of air pollution unaccounted for in the Bay Area Air Quality Plan; or (3) conflict with any regulation of the BAAQMD or adopted control measure in the Air Quality Plan.

GOALS, POLICIES, AND PROGRAMS

GENERAL

Goal 1: Minimize the risk of hazards to Los Altos residents.

Policy:

1. The City shall seek to inform the public of areas of risk from hazards.

Program:

1. **Development Constraints Diagram.** Adopt the Development Constraints Diagram as a part of the General Plan. Use the Development Constraints Diagram and any additional data available in greater detail in reviewing development proposals.

2. **Hazard analysis.** Where determined necessary, require detailed analysis of development constraints and determine appropriate mitigation for development proposed in hazardous areas.

EMERGENCY PREPAREDNESS

Goal 2: Plan for City and citizen actions in the event of a disaster.

Policies:

2. The City shall maintain an updated Emergency Preparedness Plan. The plan should increase public awareness of fire, seismic, and other natural hazards and of methods to avoid or mitigate the effects of these hazards, and should ensure that critical facilities will function during and after a disaster. The plan shall contain a community component.

3. The City shall maintain communications with other agencies to provide effective emergency services.

4. The City shall cooperate with and encourage the County and neighboring cities to develop

and implement a regional Emergency Preparedness Plan.

5. The City shall cooperate with school districts to protect children's safety.

Programs:

3. **Emergency preparedness education.** Provide citywide education in emergency and disaster preparedness.

4. **Citizen volunteers.** Involve citizen volunteers in disaster relief activities wherever feasible.

5. **Emergency service personnel.** Identify and enlist the participation of residents who can be a resource during an emergency (*e.g.*, nurses, doctors, ham radio operators, volunteer firefighters, *etc.*).

6. **Public shelter.** Identify public shelters where aid and supplies will be available.

7. **Emergency water sources.** Identify water sources in case of major disruption of water delivery capacity.

8. **School emergency preparedness.** Communicate disaster preparedness services to schools.

9. **First aid training.** Work with school districts to provide training programs in first aid and cardio-pulmonary resuscitation (CPR).

FLOOD HAZARDS

Goal 3: Reduce the potential for flooding along creeks that traverse Los Altos.

Policies:

6. The City shall work with other jurisdictions to regulate land uses in flood-prone areas and should allow development in those areas only with appropriate mitigation.

7. The City shall identify and seek sources of funding to be used toward the prevention of flooding.

8. The City shall continue to discourage concrete lining of creek beds, and shall encourage the Santa Clara Valley Water District to use environmentally sensitive solutions to control local erosion problems.

Programs:

10. **Flood prone areas.** Annually review areas identified on the Development Constraints Diagram as subject to flooding.

11. **Creek maintenance.** Encourage the Santa Clara Valley Water District to regularly maintain creek banks, to clear drainage channels of silt and debris, and to minimize disruption to riparian habitat in an environmentally sensitive manner.

12. **Bridge construction.** Analyze bridge structures for constrictions that cause siltation or erosion.

13. **Erosion.** Enforce measures to reduce soil erosion and volume and velocity of surface runoff from construction sites and large parking lots or other impermeable surfaces. Work with other jurisdictions to ensure that development along creeks will not cause erosion which will affect Los Altos.

SEISMIC AND GEOLOGIC HAZARDS

Goal 4: Minimize risks of personal injury and property damage associated with seismic activity, landslides, and other geologic hazards.

Policies:

9. The City shall identify potentially hazardous conditions and areas.

10. The City shall establish acceptable levels of risk/life safety standards and see that build-

ings are brought up to those standards, consistent with State law.

11. The City shall avoid placement of critical facilities and high occupancy structures in areas prone to ground failure during an earthquake.

12. The City shall require soil analysis and erosion mitigation for all development proposed on sites prone to erosion or ground failure.

Programs:

14. **Structural safety standards.** Enforce safety standards for design of new and existing structures. Define unacceptable levels of risk for high-occupancy structures and give priority to identifying critical public facilities and buildings which present unacceptable levels of risk.

15. **Hazardous building identification.** Identify potentially seismically hazardous buildings, defined as "all public and private buildings intended for human habitation, except buildings having 5 living units or less, constructed prior to enactment of local codes requiring earthquake resistant design and constructed with unreinforced masonry bearing walls," and establish a mitigation program based on type of use, level of occupancy, and/or type of construction. The mitigation program must address the need to balance the objectives of earthquake mitigation, historic preservation, and economic viability.

16. **Restrict development on slopes.** Restrict development on slopes greater than 30 percent.

NOISE

Goal 5: Minimize the amount of noise to which the community is exposed and the amount of noise created by future development.

Policies:

13. The City shall establish maximum acceptable noise levels for various noise-sensitive uses which indicate the highest acceptable level for new construction in an existing noise environment.

    - 60 dBA CNEL is established as the maximum acceptable outdoor noise exposure level for single family residential areas.
    - 65 dBA CNEL is established as the maximum acceptable outdoor noise exposure level for multiple-family residential areas.
    - 70 dBA CNEL is established as the maximum acceptable outdoor noise exposure level for schools (public and private), libraries, churches, hospitals, nursing homes, parks, commercial, and recreation areas. Excepted from these standards are golf courses, stables, water recreation, and cemeteries.

14. In the event that outdoor acceptable noise exposure levels cannot be reached by various noise attenuation mitigation measures, work to achieve indoor noise levels not exceeding 45 dBA CNEL.

15. The City shall consider the potential impact on the general noise level when planning changes and improvements to the city's circulation system.

16. In the event it is determined that significant increased noise levels will result from an improvement to the circulation system, reasonable mitigation measures shall be required to reduce noise levels to those determined acceptable.

17. The City shall consider noise attenuation measures to reduce noise levels to an acceptable level for any development along roadways with a higher than established dBA.

18. The City shall require an acoustical analysis for new construction (including walls and fences that exceed height limits) in an area with a higher than established dBA.

Programs:

17. **Noise contours.** Adopt the noise contour diagrams as a part of the General Plan. Use the noise contours as a guide in reviewing land use compatibility decisions.

18. **Noise attenuation measures.** Require noise mitigation measures by encouraging additional setbacks, proper site planning, architectural design shielding noise-sensitive uses, and proper construction techniques to reduce noise levels to an acceptable level.

19. **Noise barriers.** Consider noise barriers and berms where other noise attenuation measures (setbacks, architectural design, and construction techniques) fail to reduce the adverse levels.

20. **Noise wall design standards.** Exterior wall construction and design will be based on the following guidelines:
    - Walls should be made of a textured surface material that is compatible with the design of the neighborhood, and visually attractive on the side seen by the public.
    - The monotony of a long wall shall be broken by visual relief through periodically recessing the wall or constructing pilasters.
    - Landscaping such as trees, shrubs, vines and raised grade levels shall be used on the street-facing side of the wall to soften the appearance of the wall, reduce visual impact, and augment the wall as an additional noise barrier if needed.
    - Walls may be constructed to a height necessary to reduce exterior noise to an appropriate level.

21. **Noise ordinance.** Review present restrictions and revise the noise ordinance as necessary for consistency and ease of enforcement.

22. **Anti-noise enforcement.** Provide for enforcement of anti-noise legislation.

23. **Noise insulation.** Develop requirements for noise insulation of new and existing swimming pool pumps and other mechanical equipment.

24. **Limit noisy maintenance activities.** Limit noise-producing maintenance activities in parks to those hours which will least affect surrounding residents and park users.

25. **Traffic noise.** Continue to identify major arterials which exceed noise standards and seek to control the traffic noise level.

26. **Animal noise.** Review and revise animal noise ordinances for adequacy and ease of enforcement.

27. **Commercial noise.** In reviewing proposals for commercial development, require mitigation to ensure that exterior noise levels on adjacent residential properties are reduced to acceptable levels.

28. **Aircraft noise.** Coordinate with the appropriate agencies to review and monitor aircraft routes.

29. **Mechanical equipment.** Consider revisions to the noise ordinance to control leaf blowers and other mechanical equipment.

AIR QUALITY

Goal 6: Maintain or improve air quality in Los Altos.

Policies:

19. The City shall support the principles of reducing air pollutants through land use, transportation, and energy use planning.

20. The City shall encourage transportation modes which minimize single-passenger motor vehicle use and the resulting contaminant emissions.

21. The City shall interpret and implement the General Plan to be consistent with the regional Bay Area Air Quality Management Plan, as periodically updated.

22. The City shall insure location and design of development projects so as to conserve air quality and minimize direct and indirect emissions of air contaminants.

Programs:

30. **Emission control through energy conservation.** Reduce direct emissions through energy conserving construction which minimizes space heating.

31. **Vehicle trip reduction.** Promote use of public transit, ridesharing, combined motor vehicle trips to work and services, use of bicycles, and walking.

32. **Traffic flow improvements.** Implement measures to improve traffic flow, minimizing the stop-and-go traffic that intensifies hydrocarbon pollution.

33. **Pollutant complaint referrals.** Refer citizen complaints about odors and other airborne emissions to the Bay Area Air Quality Management District for investigation and actions.

34. **Fireplace emissions.** Provide information on proper use of wood burning fireplaces and stoves to minimize smoke.

NOTES TO CHAPTER 9.

[1] Personal communication with Paul Brand, Bay Area Air Quality Management District, May 1, 1987.

RESOLUTION NO. 93-36

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LOS ALTOS AMENDING THE LOS ALTOS GENERAL PLAN, CHAPTER 9, NATURAL ENVIRONMENT AND HAZARDS, CREATING GOAL 7, POLICIES 23 AND 24, AND PROGRAM 35.

WHEREAS, it is the policy of the State of California, as provided in Section 65300 et seq. of the California Government Code, that every City and County prepare a General Plan containing policies to guide its future development; and

WHEREAS, the California Government Code, Section 65358 provides for amendment of the General Plan; and

WHEREAS, a Negative Declaration of Environmental Impact was prepared in accordance with the California Environmental Quality Act; and

WHEREAS, the City Council of the City of Los Altos finds, pursuant to Government Code Section 65358 (a), the General Plan amendment to be in the public interest, and finds that the actions are an effective way to protect the community from the negative impact of surface runoff pollution.

NOW, THEREFORE, BE IT HEREBY RESOLVED, that the City Council of the City of Los Altos certifies that the Negative Declaration on the General Plan amendment is complete, correct, and adequate, and prepared pursuant to the California Environmental Quality Act, and all appropriate State and local guidelines;

BE IT FURTHER RESOLVED, that the City Council of the City of Los Altos adopts an amendment to the General Plan, Chapter 9, Natural Environment and Hazards to reflect the following highlighted changes:

Chapter 9, Natural and Environmental Hazards

Page 135, paragraph 2, sentence 2 reads:

> The City further desires to minimize the public health hazards of noise, and air pollutants.

And, would be changed to:

The City further desires to minimize the public health hazards of noise, air pollution, and surface runoff pollutants.

Page 142, new section of text added after AIR QUALITY section:

SURFACE RUNOFF

The U.S. Environmental Protection Agency has identified urban surface runoff as the leading cause of water pollution in the United States. Surface runoff water may contain a variety of pollutants including heavy metals, oil and grease, household chemicals, pesticides, fertilizers, and eroded soils. These pollutants are typically generated from a variety of diffuse sources present throughout the urban environment, and are referred to herein as "nonpoint" source pollution.

Surface runoff from Los Altos is discharged into local creeks which empty directly into the South San Francisco Bay. Both State and Federal authorities have identified storm water runoff as a major source of pollution adversely affecting the beneficial uses of the Bay. They have issued a National Pollutant Discharge Elimination System (NPDES) Permit to the Santa Clara Valley Nonpoint Source (NPS) Program of which Los Altos is a co-permittee. The NPDES Permit requires the NPS Program to develop and implement municipal storm water management programs and other specified measures to address the impairment of water quality in the Bay.

It is extremely difficult and expensive to control the composition of municipal storm water discharges through conventional waste water treatment technologies. Therefore, it is critical, and a requirement of the NPDES Permit, that the City of Los Altos implement measures to identify and control the sources of pollutants into the City's storm drainage system before they are actually discharged.

In order to control the nonpoint sources of pollutants, the City has reviewed the types of land uses and practices which have the potential to discharge pollutants into the storm drain system. In doing so, the City has identified several key areas to regulate potential pollutant sources. Recent ordinances prohibit most non-storm water discharges into the storm drain system. Public outreach efforts include a storm drain stenciling program to remind people that the storm drains flow directly into local creeks and ultimately into the San Francisco Bay, and that dumping is prohibited. The City is committed to protecting streams and other waters from nonpoint source pollution by its involvement in the NPS Program.

Page 146, text added after AIR QUALITY programs:

SURFACE RUNOFF

Goal 7: Abate nonpoint source water pollution.

Policies:

23. The City shall seek to ensure that surface runoff water discharges into the storm water system comply with the National Pollutant Discharge Elimination System Permit and the receiving water limitations assigned by the California Regional Water Quality Control Board.

24. The City shall establish nonpoint source pollution control measures and programs to attempt to reduce and control the discharge of pollutants into the City's storm drains and local creeks.

Programs:

35. **Santa Clara Valley Nonpoint Source Pollution Control Program.** Implement, where feasible, the Nonpoint Source Program including the City's local storm water management program.

I HEREBY CERTIFY that the foregoing Resolution was duly introduced and adopted by the City Council of the City of Los Altos at a meeting thereof held on September 28, 1993.

AYES: Mayor Lave, Councilmembers Laliotis, Reeder and Williams

NOES: None

ABSENT: Councilmember Bruno

Penelope R. Lave
Penelope Lave, Mayor

Carol Scharz
Carol Scharz, City Clerk

9. NATURAL ENVIRONMENT & HAZARDS

This chapter covers safety, as prescribed by Safety Element provisions of the Government Code, Section 65302(g); noise, as covered by Noise Element guidelines of the Government Code, Section 65302(f); and air quality, which is part of the state mandated Conservation Element, Section 65302(d).

hange
ere →

Los Altos seeks to protect the community from unreasonable risks associated with the effects of seismic events—surface rupture, ground shaking, ground failure, and dam failure—flooding and slope instability. ~~The City further desires to minimize the public health hazards of noise and air pollutants.~~ The dominant theme of this chapter is to **protect the community from injury, loss of life, property damage, and deteriorating quality of life resulting from natural catastrophes, other hazardous conditions, and pollutants.**

It is impossible to remove all risks associated with each specific type of hazard, but the intent is to reduce risks to life and property and to make informed decisions about land use and development near hazards or affected by them.

Maps referred to in this chapter are found in the *Technical Appendix* or are available from the City's planning department. The Development Constraints Diagram which shows floodways, areas with slopes over 15 percent, and fault lines in or near the city is available at two scales. The diagram using a scale of 1" = 1000' is included in the map pocket of the General Plan. The diagram at a scale of 1" = 500' is available for viewing at the City's planning department.

EMERGENCY PREPAREDNESS

The first line of defense against any catastrophe is to avoid threatening situations and to prepare disaster response plans that will minimize the harmful impacts. Quick action in the event of an emergency will reduce the probability of additional injuries and damage.

Government disaster preparedness planning efforts are handled primarily by the fire and police departments, as well as by the County Office of Emergency Services. The County and each city are required to prepare disaster plans in accordance with State regulations, to assign duties for emergency response, to designate an emergency operations center and emergency shelters, and to establish an emergency broadcast system.

Part of a disaster response plan is identification of those facilities that will be relied upon in the event of a catastrophe. Critical facilities are hospitals; fire stations; police stations; the emergency operations center; gas, electric, and water lines; and ambulance services.

The City has appointed a Community Emergency Preparedness Committee to work with the City staff to prepare and adopt an emergency preparedness plan. The City staff is responsible for implementing the plan.

FLOOD HAZARDS

Flood hazards fall into three categories: **natural flooding, dam inundation, and mud and debris flows.**

Natural flooding results from major rainstorms that cause overflows of stream courses, and may be aggravated by inadequacies in local storm drain facilities. Portions of the four creeks flowing through Los Altos have been channelized to increase the capacity of the creeks to reduce flooding and to permit development of the flood plain.

SURFACE RUNOFF section added here

Santa Clara County is the primary cause of air pollution in the subregion. Planning that can reduce the overall vehicle miles traveled (VMT) will also reduce the amount of air pollutants generated. In addition, air movement patterns in the Bay Area carry air pollutants from north to south. The Santa Clara Valley thereby receives the accumulated air pollution from its neighbors to the north.

The Bay Area experienced 5 days of ozone non-attainment in 1986. (This compares to 174 days of non-attainment in Los Angeles.) The monitoring station in Mountain View near Los Altos registered only one day of ozone non-attainment in 1986. Not complying with federal standards means that after December 31, 1987, the Environmental Protection Agency (EPA) will (1) cease funding for cleaning-up of air pollution, (2) ban construction of wastewater treatment facilities (to slow population growth), and (3) cease highway funding—unless federal legislation is changed.[1]

High demand for energy because of *inefficiencies* in space heating and electricity use also creates pollutants. Los Altos—being a receiver of air pollutants from the entire Bay region—cannot solve the regional air quality problem. Through appropriate land use, transportation, and energy use planning, however, the City can participate in the most feasible remedies.

Air quality is managed by the regional Bay Area Air Quality Management District (BAAQMD). The goal of air quality regulatory agencies is attainment of ambient air quality standards. The 1982 Bay Area Air Quality Plan seeks to control stationary and mobile sources of air pollution in order to meet these standards. In keeping with the plan, Los Altos will not allow any development which would (1) singly or cumulatively violate any State ambient air quality standard; (2) generate a significant amount of air pollution unaccounted for in the Bay Area Air Quality Plan; or (3) conflict with any regulation of the BAAQMD or adopted control measure in the Air Quality Plan.

GOALS, POLICIES, AND PROGRAMS

GENERAL

Goal 1: Minimize the risk of hazards to Los Altos residents.

Policy:

1. The City shall seek to inform the public of areas of risk from hazards.

Program:

1. **Development Constraints Diagram.** Adopt the Development Constraints Diagram as a part of the General Plan. Use the Development Constraints Diagram and any additional data available in greater detail in reviewing development proposals.

2. **Hazard analysis.** Where determined necessary, require detailed analysis of development constraints and determine appropriate mitigation for development proposed in hazardous areas.

EMERGENCY PREPAREDNESS

Goal 2: Plan for City and citizen actions in the event of a disaster.

Policies:

2. The City shall maintain an updated Emergency Preparedness Plan. The plan should increase public awareness of fire, seismic, and other natural hazards and of methods to avoid or mitigate the effects of these hazards, and should ensure that critical facilities will function during and after a disaster. The plan shall contain a community component.

3. The City shall maintain communications with other agencies to provide effective emergency services.

4. The City shall cooperate with and encourage the County and neighboring cities to develop

20. The City shall encourage transportation modes which minimize single-passenger motor vehicle use and the resulting contaminant emissions.

21. The City shall interpret and implement the General Plan to be consistent with the regional Bay Area Air Quality Management Plan, as periodically updated.

22. The City shall insure location and design of development projects so as to conserve air quality and minimize direct and indirect emissions of air contaminants.

Programs:

30. **Emission control through energy conservation.** Reduce direct emissions through energy conserving construction which minimizes space heating.

31. **Vehicle trip reduction.** Promote use of public transit, ridesharing, combined motor vehicle trips to work and services, use of bicycles, and walking.

32. **Traffic flow improvements.** Implement measures to improve traffic flow, minimizing the stop-and-go traffic that intensifies hydrocarbon pollution.

33. **Pollutant complaint referrals.** Refer citizen complaints about odors and other airborne emissions to the Bay Area Air Quality Management District for investigation and actions.

34. **Fireplace emissions.** Provide information on proper use of wood burning fireplaces and stoves to minimize smoke.

Goals, Policies, Progams
added here

NOTES TO CHAPTER 9.

[1] Personal communication with Paul Brand, Bay Area Air Quality Management District, May 1, 1987.

RESOLUTION NO. 94-4

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LOS ALTOS AMENDING THE LOS ALTOS GENERAL PLAN, CHAPTER 4, TEXT REGARDING LAND USE AND AMENDING PROGRAM 4, REVIEW OF UNINCORPORATED DEVELOPMENT

WHEREAS, it is the policy of the State of California, as provided in Section 65300 et seq. of the California Government Code, that every City and County must prepare a General Plan containing policies to guide its future development; and

WHEREAS, the California Government Code, Section 65358 provides for amendment of such General Plan;

WHEREAS, such amendment is proposed to 1) modify the text of Chapter 4 regarding Land Use Designations; and 2) amend Program 4, Review of Unincorporated Development, to provide internal consistency in the General Plan; and

WHEREAS, amendment of a General Plan is a project as defined in the California Environmental Quality Act of 1970, as amended (hereinafter "CEQA"), and the provisions of Title XIV, California Administration Code, Guidelines for the Implementation of CEQA (hereinafter "Guidelines"); and

WHEREAS, a Negative Declaration of Environmental Impact was prepared in accordance with CEQA and the State CEQA Guidelines, assessing the impacts of said General Plan amendment; and

WHEREAS, said General Plan amendment has been prepared with public input at a public hearing held before the Planning Commission January 6, 1994, and at a public hearing before the City Council February 8, 1994; and

WHEREAS, the City Council of the City of Los Altos finds that the amendment to the General Plan is necessary to provide consistency between the General Plan and the zoning ordinances; and

WHEREAS, the City Council of the City of Los Altos finds the General Plan amendment consistent with the General Plan Chapter 4, Goal 4, and Policy 16 in that the actions provide for land use patterns and designations consistent with the future social and economic conditions in the City which recognizes existing development patterns and expected future conditions; and

WHEREAS, the City Council of the City of Los Altos finds, pursuant to Government Code Section 65358 (a) the General Plan amendment to be in the public interest.

NOW THEREFORE, BE IT HEREBY RESOLVED, that the City Council of the City of Los Altos amends the General Plan, Chapter 4 as follows:

Page 31, Land Use Designations is amended to read:

> **Land Use Designations**
> Listed below are the land use categories, their definitions, and densities. The boundaries of each category appear on the Land Use Plan. Residential development density is described in units per net acre. The densities shown are ranges; Except Residential-3 and 5, they are interpreted consistent with the underlying zoning or pre-zoning. The density ranges in Residential-3 reflects existing lot sizes, and the final densities for Residential-5 properties are to be decided when a project is proposed. For the commercial categories, the specific uses mentioned are illustrative only.

And, Page 45, Program 4, Review of unincorporated development, is amended as follows:

4. Review of unincorporated development. Review and make recommendations to the County on applications for development in the City's planning area to reflect -
   - The City's residential design standards,
   - The City's development standards, and
   - Consistency between pre-zoning and Land Use Designations in General Plan Conformity requests.

I HEREBY CERTIFY that the foregoing Resolution was duly introduced and adopted by the City Council of the City of Los Altos at a meeting thereof held on the 8th day of February, 1994, by the following roll call vote:

AYES: Mayor Bruno and Councilmembers Gray, Laliotis and Williams

NOES: None

ABSENT: Councilmember Reeder

MARGARET S. BRUNO, MAYOR

Carol Scharz
CAROL SCHARZ, CITY CLERK

CHAPTER 8. STREAM PROTECTION AND PRESERVATION*

Sec. 5-8.01. Purposes.

The public peace, health, safety, and general welfare require that:

(a) Creeks be protected from the detrimental effects of urbanization, disturbance of natural conditions, excessive storm water runoff, sedimentation, and erosion;

(b) Wildlife habitat and trees within the setbacks provided by this chapter be protected from destruction and adverse intrusion from the activities of persons for the public enjoyment of the natural riparian setting;

(c) Properties adjacent to creeks should be protected from flooding; and

(d) A public pathway should be established along or near Adobe Creek between Shoup Park and O'Keefe Lane in the general location shown on Exhibit A attached to Ordinance No. 86-155, on file in the office of the City Clerk.

(§ 3, Ord. 86-155, eff. July 24, 1986)

Sec. 5-8.02. Definitions.

Definitions for the purposes of this chapter shall be the same as in Section 5-5.602 of this Code.

(§ 5, Ord. 92-288, eff. October 8, 1992)

Sec. 5-8.03. Watercourse protection.

(a) *Watercourse protection requirements.* Except as provided in Section 5-8.05, every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property reasonably free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse. The owner or lessee shall not remove healthy bank vegetation beyond that actually necessary for maintenance, nor remove said vegetation in such a manner as to increase the vulnerability of the watercourse to erosion.

---

* The title of Chapter 8, formerly entitled "Obstruction of Streams", amended by Ordinance Nos. 86-147A, effective May 22, 1986, and 86-155, effective July 24, 1986.

(b) *Acts requiring permit.* No person shall commit or cause to be committed any of the following acts, unless a written permit has first been obtained from the appropriate agency or department.

(1) Discharge into or connect any pipe or channel to a watercourse;

(2) Modify the natural flow of water in a watercourse;

(3) Carry out development of permanent structures, major earthmoving or construction of fences within a setback designated in whole or in part to protect a watercourse;

(4) Deposit in, plant in, or remove any material from, a watercourse, including its banks, except as required for necessary maintenance;

(5) Construct, alter, enlarge, connect to, change, or remove any structure in a watercourse; or

(6) Place any loose or unconsolidated material along the sides of or within a watercourse or so close to a side as to cause a diversion of the flow, or to cause a probability of such material being carried away by stormwater passing through such watercourse.

(§ 5, Ord. 92-288, eff. October 8, 1992)

Sec. 5-8.04. Setbacks along Adobe Creek.

Every parcel adjacent to Adobe Creek from Shoup Park to O'Keefe Lane, and subdivided after August 13, 1985, shall be subject to a setback of (a) forty (40') feet, if three (3) acres in size or less, or eighty (80') feet, if larger, from the top of the nearest bank thereof or (b) the distance of any easement owned or controlled by the Santa Clara Valley Water District, or (c) the 100-year flood plain, whichever is greater, (a), (b), or (c). The location of the bank shall be determined and approved at the time of the application by the City Engineer. If the location of the top of the bank is vague or ill-defined, the City Engineer may determine the point from which the setback is measured as a specified distance from the center line of Adobe Creek. Subsequent changes in the actual location of the top of the bank shall not result in the relocation of a previously-approved setback line.

(§ 4, Ord. 86-155, eff. July 24, 1986, renumbered by § 4, Ord. 92-288, eff. October 8, 1992)

Sec. 5-8.05. Permitted and prohibited activities in Adobe Creek and setbacks: Offers of dedication.

(a) *All parcels.* No structure, grading, paved area, fence, water-containing facility, disturbance of subsoil, or any other man-made construction, nor any dumping, use of herbicides or pesticides, or removal of vegetation, except by permission from the Planning Department, shall be permitted within Adobe Creek and the setback required by this chapter, except pathways, access roads, utilities, bridges, and fire and flood control measures.

All construction within Adobe Creek and the setbacks shall be subject to review by the Architecture and Site Control Committee as provided in Section 10-2.2725 of Article 27 of Chapter 2 of Title 10 of this Code. Structures existing on July 24, 1986, shall be deemed lawful nonconforming structures (see Section 10-2.2703 through 10-2.2707 of said Article 27).

On parcels where a public pathway is proposed as shown on Exhibit A attached to Ordinance No. 86-155, on file in the office of the City Clerk, applicants for divisions of land shall offer for dedication a conservation easement over the entire area restricted by Section 5-8.02 of this chapter in a form satisfactory to the City. Such offer, and all other offers of access, trails, and other features to be located at grade, shall be by deed before the final map approval.

(b) *Removal of vegetation on parcels three (3) acres or less in size.*

(1) On parcels three (3) acres or less in size within the area fifteen (15') feet from the top of the bank (refer to Area 1 on Exhibit B attached to Ordinance No. 86-155, on file in the office of the City Clerk), no vegetation may be removed, except poison oak provided no herbicides are used, and as required by the Fire Department.

(2) On parcels three (3) acres or less in size within the area fifteen (15') feet to forty (40') feet from the top of the bank (refer to Area 2 on said Exhibit B):

(i) The removal of riparian and indigenous vegetation, including redwoods, shall be allowed by right for trees less than twelve (12") inches in circumference measured four and one-half (4½') feet from the ground, and up to fifty (50%) percent of shrubs and lesser vegetation, for the purpose of thinning or fire control;

(ii) The removal of non-riparian or non-indigenous vegetation (except redwoods) shall be permitted provided the root systems of trees and shrubs are left for stabilization; and

(iii) The removal of vegetation otherwise prohibited by this section shall require approval by the Fire Department and Planning Department.

(§ 3, Ord. 147A, eff. May 22, 1986, as amended by § 5, Ord. 86-155, eff. July 24, 1986, renumbered by § 4, Ord. 92-288, eff. October 8, 1992)

Sec. 5-8.06. Exceptions.

Any owner or his representative may seek an exception to any provision of Section 5-8.02 or 5-8.03 of this chapter by filing an application with the Planning Department, and shall otherwise comply with and be subject to the fees and procedures for a use permit as provided in Article 28 of Title 10 of this Code, except that the standards for granting or denying an application and findings which shall be made shall be the following:

(a) That exceptions from the provisions of this chapter shall be granted only when, because of special circumstances applicable to the property and/or the setback provided by this chapter, including size, shape, topography, location, or surroundings, the strict application of the provisions of this chapter deprives such property of substantially similar privileges enjoyed by other property in the vicinity;

(b) That the granting of the exception will not be detrimental to the health, safety, or welfare of persons living or working in the vicinity or injurious to property or improvements in the vicinity;

(c) That the proposed location of the exception is desirable or essential to the public health, safety, comfort, convenience, prosperity, or welfare; and

(d) That the granting of the exception will be consistent with the purposes of the setbacks as provided in Section 5-8.01 of this chapter. All applications shall be referred to the Parks and Recreation Commission to make the findings required by this subsection.

(§ 4, Ord. 147A, eff. May 22, 1986, as amended by § 6, Ord. 86-155, eff. July 24, 1986, renumbered by § 4, Ord. 92-288, eff. October 8, 1992)

Sec. 5-8.07. Obstruction of streams unlawful.

It shall be unlawful for any person to place or throw, or cause to be placed or thrown, into any stream or creek within the City, or into the bed or upon the banks thereof, any brush, timber, lumber, junk, cans, bottles, or carcasses of any dead animals, or any material potentially harmful to stormwater quality or wildlife; provided, however, this section shall not apply to brush, timber, lumber, or other materials placed for the protection of the banks of streams and properly secured so as not to be carried away by the water.

(§ 1, Ord. 47, as amended by § 5, Ord. 147A, eff. May 22, 1986, as renumbered by § 2, Ord. 86-155, eff. July 24, 1986, and § 6, Ord. 92-288, eff. October 8, 1992)

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
23660
OAKLAND, CA 94623-0660
(510) 286-4444
TDD (510) 286-4454

2/24 TA Neudorf
BH Keldner

February 21, 1995

SCL-280-15.05
SCH95013041
SCL280164

Mr. Terry A. Neudorf
Environmental Planner
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Re: Notice of Preparation (NOP) of Draft Environmental Impact Report (DEIR): Adobe Creek Watershed Project. Project proposes several flood and erosion control modifications to the upper reaches of Adobe Creek, between El Camino Real and upstream of Moody Road in Santa Clara County.

Dear Mr. Neudorf:

Thank you for including the California State Department of Transportation (Caltrans) in the environmental review process. We have reviewed the above referenced NOP and wish to forward the following comments:

> The DEIR should include a discussion of construction traffic impacts as they relate to State highway facilities. All work performed within the State right-of-way will require an encroachment permit from Caltrans. A completed application, environmental documentation and five sets of maps should be submitted to the following address:

G. J. Battaglini, District Office Chief
Caltrans District 4
Maintenance Services & Permits
P. O. Box 23660
Oakland, CA 94623-0660

We appreciate the opportunity to work with you on this project and wish to continue close correspondence on any new developments. Should you have any questions regarding these comments, please contact Salimah As-Sabur of my staff at (510) 286-5583.

Sincerely,

JOE BROWNE
District Director

By: Phillip Badal

PHILLIP BADAL
District Branch Chief
IGR/CEQA

cc: Mike Chiriatti, SCH
Craig Goldblatt, MTC
Patricia Perry, ABAG

FED 02/28 TANEUDORF
FKP BHGOLDORF

City of Palo Alto
Department of Planning and Community Environment

PALO ALTO
100 YEARS
1894-1994

Planning Division

February 27, 1995

Terry A. Neudorf, Environmental Planner
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Subject: Adobe Creek Watershed Project-- EIR Notice of Preparation

Dear Terry:

Thank you for the opportunity to respond to the Notice of Preparation of the Environmental Impact Report for the Adobe Creek Watershed Project. The City of Palo Alto has a keen interest in Adobe Creek, which forms the southern boundary of our city and is one of three remaining creeks in Palo Alto still in a natural condition along all or part of its length from the Foothills to the Bay. All or part of Reaches 1-5 of the proposed project are located within the City of Palo Alto. In addition, the city is concerned about flood control and environmental issues along the entire length of the creek corridor.

The City Planning Department and the Public Works Department submit the following comments for consideration in preparation of the project EIR:

1. The design and implementation plan for replacing the existing culvert under El Camino Real and rebuilding the upstream and down stream transition structures need to be developed in coordination with the City of Palo Alto for two reasons: 1) This location is the gateway to the city from the south and is identified in the city's Comprehensive Plan as the location for a specially designed gateway feature. The city views the proposed replacement of the culvert as an opportunity to design a special entry to the city in this location and would like to work with the SCVWD to accomplish this; 2) The city is currently reviewing an entitlement application for the redevelopment of the Hyatt Hotel site on the north side of Adobe Creek at El Camino Real. The redevelopment project will need to address issues such as creek setbacks, access, planting along the creek, coordination with the city gateway feature, and traffic issues during construction, all of which will need to be coordinated with the Water District's plans in this location.

2. Consider the effects of the proposed reconstruction of the El Camino Real culvert on local businesses and residents during construction (e.g. loss of on-street parking, reduced visibility of storefronts and business signs, noise, dust, etc.).

P:\SHARE\SCVWD.LTR

250 Hamilton Avenue
P.O. Box 10250
Palo Alto, CA 94303
415 329.2441
415 329.2240 Fax

3. Conduct an ambitious public information campaign to notify local businesses and residents about the proposed project.

4. Coordinate with the City of Palo Alto's Planning Department to determine the review process and schedule for the Environmental Impact Report and of subsequent implementation of the various phases of the project.

5. Adobe Creek is identified in the city's Comprehensive Plan as a natural resource and wildlife habitat area, and the Plan calls for the protection of these resources. Intervention should be conducted in a way that does not interrupt the continuous natural riparian corridor or reduce the habitat value of this very important natural system. Alternative methods to accomplish flood control and bank stabilization with the least impact on natural habitat should be used. Several project descriptions indicate gabion baskets are proposed. While some plants may be incorporated for an aesthetic effect, use of gabions generally does not allow for establishment of a natural riparian habitat, particularly the number and variety of plant materials essential to sustain a natural riparian system. Biotechnical creek intervention techniques should be used that leave existing riparian trees and shrubs along the creek banks in place wherever possible, and where banks must be altered and plants removed, a continuous high quality natural riparian system reestablished. Such techniques have been used successfully in the Bay Area and in other parts of the country.

6. The project description indicates a use of herbicides in the maintenance program. Trees and shrubs along the banks of natural streams shade out undergrowth within the stream channel, thus helping to keep it clear for flood water conveyance. Design alternatives that replicate natural systems and reduce the need for herbicides should be examined.

Again, thank you for the opportunity to comment on this notice of preparation. Please feel free to call me if you have any questions regarding our comments. We look forward to working together with you on this project.

Sincerely,

Virginia Warheit

VIRGINIA WARHEIT
Senior Planner
(415) 329-2364

cc: Planning Director, City of Los Altos
Mike Rigney, Coyote Creek Riparian Station
Ken Schreiber, Nancy Lytle, Jim Gilliland, Sarah Cheney, Lisa Grote,
Joseph Colonna, City of Palo Alto Planning Department staff
Joe Teresi, City of Palo Alto Public Works Engineering Division

P:\SHARE\SCVWD.LTR

STATE OF CALIFORNIA - THE RESOURCES AGENCY
PETE WILSON, Governor
DEPARTMENT OF FISH AND GAME
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5500

March 20, 1995

Mr. Terry Neudorf
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118-3686

Dear Mr. Neudorf:

Adobe Creek Watershed Project, Notice of Preparation (NOP)
Santa Clara County, SCH #95013041

Department of Fish and Game personnel have reviewed the NOP for the above-named project. The project proposes several flood and erosion control modifications to the upper reach of Adobe Creek between El Camino Real and upstream of Moody Road in Santa Clara County.

The Draft Environmental Impact Report (DEIR) should contain a complete description and map of vegetation along the creek including acreages. Impacts to habitats and mitigation measures necessary to offset those impacts should be identified and discussed. The Department recommends mitigation for all habitats. We recommend impacts be mitigated by avoidance, minimization of impacts, and acquisition and preservation as open space of at least an equal area and quality as that lost.

It is the policy of this Department that a project should cause no net loss of either wetland acreage or wetland habitat value. We recommend impacts to the creek be avoided where possible. Impacts would include, but are not limited to, road crossings, culverts, channelization, and rip rap. If improvements to the creek must be made for reasons of public health and safety, retention basins would be preferable to channelization of the entire stream. In areas which must be channelized, we recommend the channel be oversized in order to allow for vegetation along both banks. Unavoidable impacts should be identified and mitigation provided for in the document. Mitigation for lost wetlands or creeks must include the creation of new wetlands on at least a 1:1 basis. Higher value wetlands will require higher ratios for compensation. Areas proposed as wetland mitigation sites must be identified specifically in the document.

Riparian vegetation removed should be replaced on a 3:1 basis by acreage, using locally-obtained native species. Replacement of non-native riparian vegetation should also be on a 3:1 basis, except when, by vegetative mapping, it is demonstrated that a monotypic stand of non-native vegetation (i.e., eucalyptus) contributes significantly to the riparian corridor. Under this scenario, the Department would consider negotiating a lower riparian replacement ratio for the impacted monotypic stands of non-native vegetation.

Any work within the banks of the creek, including road crossings and culverts, will require a streambed alteration agreement with this Department. The Department has direct jurisdiction under Fish and Game Code sections 1601-03 in regard to any proposed activities that would divert or obstruct the natural flow or change the bed, channel, or bank of any stream. We recommend early consultation since modification of the proposed project may be required to avoid impacts to fish and wildlife resources. Formal notification of proposed channel modifications under Fish and Game Code Section 1603 should be made after all other permits and certifications have been obtained. Work cannot be initiated until a streambed alteration agreement is executed.

Surveys should be conducted for any rare, threatened, or endangered species which may exist on site. Federal candidate species, wildlife listed as species of special concern, and plants listed by the California Native Plant Society should be included. The Department's Natural Diversity Data Base should be consulted for any known site-specific occurrences and a list of species found in the general area. A report from the Data Base which lists no findings for the project site does not indicate these species do not exist there, only that no information is in the file. Consequently, a negative result from a Data Base search must not be used to obviate the need for requisite surveys.

Surveys for sensitive species should be conducted at the proper time of year to locate them. Impacts to these species and their habitats should be avoided. Impacts which are unavoidable should be identified and appropriate mitigation provided.

Survey results and specific mitigation measures must be included in the document. Surveys to be conducted at a later time, or mitigation measures to be identified at some future time, are not acceptable. It has been determined by court ruling that such studies and mitigation measures would be improperly exempted from the process of public and governmental scrutiny which is required under the California Environmental Quality Act. A document which requests future studies or future identification of mitigation will be considered inadequate.

If you have any questions regarding our comments, please contact Margaret Roper, Fishery Biologist, at (408) 842-8917; or Caitlin Bean, Environmental Specialist, at (707) 944-5570.

Sincerely,

Acting Regional Manager
Region 3

OFFICIAL DOCUMENT IN FILES
SANTA CLARA
VALLEY WATER DISTRICT
95 MAY 26 A 9:14

CITY OF LOS ALTOS
One North San Antonio Road
Los Altos, California 94022-3088
Tel: (415) 948-1491
Fax: (415) 941-7419

May 24, 1995

Terry A. Neudorf, Environmental Planner
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Re: Adobe Creek Watershed Project Draft EIR

Dear Mr. Neudorf:

The City of Los Altos previously responded to the Notice of Preparation (NOP) of the Draft Environmental Impact Report (EIR) for the above project in February, 1995. Since that time, several issues have come to our attention which we would believe should be addressed in the Draft EIR. Although we recognize that the NOP response period has been over for some time, we hope that you will include these issues as part of the discussion in the Draft EIR since they are similar to some of the concerns identified by the City of Palo Alto in its February 27, 1995 letter.

Please address the following issues and concerns in the Draft EIR:

1) The potential effects of the project on local businesses and residences in the vicinity of the El Camino Real culvert during the construction period due to the loss of on-street parking, difficult or restricted access, reduced visibility, noise and dust.

2) City staff suggests that the District develop and implement an aggressive program to notify local businesses and residents about the proposed project and obtain their input in regards to project design and implementation.

3) Adobe Creek at El Camino Real is the northwesterly entrance into the City of Los Altos and the southerly entrance into the City of Palo Alto. Accordingly, the District should coordinate the design and implementation of the El Camino Real culvert with Los Altos and Palo Alto to ensure that the completed project is compatible with each community's vision for an appropriate gateway feature.

4) If the proposed project includes provisions or accommodations for present or future public access along Adobe Creek, the Draft EIR should address the potential impacts to adjoining private property and the creek area related to that public access. Such impacts may include, but are not limited to, noise, lighting, public safety and services, erosion, litter, consistency with local plans, illegal camping, and privacy impacts/trespassing on adjacent private properties.

Thank you in advance for addressing these concerns in the Draft EIR and we look forward to working cooperatively with the District on this project.

Please feel free to call me at (415) 948-2790, x211 if you have questions or if you need more information.

Sincerely,

James D. Mackenzie

James D. Mackenzie, AICP
Senior Planner

cc: Carol Hoffman, Planning Director
Bruce Bane, Director of Public Works
Virginia Warheit, *Senior Planner - City of Palo Alto*

APPENDIX H

RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT

SUB-APPENDICES

H-I	List of Agencies and Individuals Commenting on the Draft EIR
H-II	Responses to Comments Received on the Draft EIR
H-III	Revisions to the Text of the EIR as a Result of Comments on the Draft EIR
H-IV	Draft EIR Mailing List
H-V	Minutes, Santa Clara Valley Water District, Board of Directors Meeting (Public Hearing-Draft EIR), December 12, 1996

APPENDIX H-I

LIST OF AGENCIES AND INDIVIDUALS COMMENTING ON THE DRAFT EIR

Provided below is a list of each written comments received, with the comment number assigned to that comment, and a reference to the page number on which the letter and its response can be found.

Comment Number — Comment & Response Begin on Page

Federal and State Agencies

1. State of California Department of Fish and Game (Letter 1), December 30, 1996 3
2. State of California Department of Fish and Game (Letter 2), December 30, 1996 10
3. State of California Governor's Office of Planning and Research, March 17, 1997 12

Regional and Local Agencies

4. Town of Los Altos Hills, December 17, 1996 14
5. City of Palo Alto, December 23, 1996 16
6. City and County of San Francisco Public Utilities Commission, December 27, 1996 45
7. City of Los Altos, January 2, 1997 47
8. San Francisco Bay Regional Water Quality Control Board, April 7, 1997 49

Individuals

9. Thomas L. Paoli (Letter 1) , Ph.D, November 26, 1996. 50
10. Edward McQuiston, December 7, 1996 51
11. Jay & Muriel Gould (Letter 1), December 7, 1996 52
12. Greenacres I, December 8, 1996 54
13. Carrasco & Associates (on behalf of Cabana Hotel), December 9, 1996 68
14. Ruth H. Koehler, December 12, 1996 70
15. Thomas G. Marazzi, December 14, 1996 76
16. Dinah's Hotel Corporation (Raymond G. Handley), December 16, 1996 77
17. Joseph W. Goodman, December 17, 1996 78
18. Thomas L. Paoli (Letter 2), Ph.D, December 24, 1996 79
19. Thomas L. Paoli (Letter 3), Ph.D, December 24, 1996 80
20. A.N. & S.J. Granzotti, December 26, 1996 81
21. Jay and Muriel Gould (Letter 2), December 30, 1996 86
22. Ruth Troetschler, December 31, 1996 87
23. Thomas C. Mandle, January 1, 1997 88
24. Libby Lucas, January 3, 1997 89
25. Jean Struthers, January 3, 1997 92
26. Alta Mesa Improvement Company (Marilyn Talbot), January 6, 1997 94
27. Trust for Hidden Villa (Judith Steiner), Undated 96

Public Hearing

Santa Clara Valley Water District, Board of Directors Meeting,
Summary of Oral Testimony, December 12, 1996 97

APPENDIX H-II RESPONSES TO COMMENTS RECEIVED ON THE DRAFT EIR

This section contains responses to all of the written comments which were received on the Draft EIR. A copy of each letter is reproduced, followed by the responses to the issues raised in the letter. The letters have been grouped into the following categories:

- Federal and State Agencies
- Regional and Local Agencies
- Individuals
- Public Hearing

STATE OF CALIFORNIA - THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5500

December 30, 1996

Mr. Scott Wilson
Adobe Creek Planning Study
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118

Dear Mr. Wilson:

Adobe Creek Watershed Planning Study Engineer's Report
and Draft Environmental Impact Report
SCH No. 95013041, Santa Clara County

Department of Fish and Game personnel have reviewed the Engineer's Report and Draft Environmental Impact Report (DEIR) for the Adobe Creek Watershed Planning Study. The objectives of the proposed project are to provide protection from the one percent flood, where feasible, control channel erosion and sedimentation, and improve future channel maintenance activities. The proposed project consists of enlarging the channel in the West Edith Avenue and Foothill College reaches, with associated rock riprap and gabion channel linings; replacing 6 bridges/culverts; repairing bank erosion at 17 sites; stabilizing the streambed with rock vortex weirs at 8 sites; constructing 5 new or upgraded maintenance access ramps; modifying the entrance structure of an existing bypass channel; and implementing a new channel maintenance program. The proposed project would impact a total of approximately 2,500 linear feet of Adobe Creek at numerous sites along the 7.5 mile project reach from El Camino Real upstream to Moody Road. 1.1

The Department recommends that the Board of Directors adopt Alternative C "West Edith Avenue Widened Earthen Channel Alternative" and Alternative D "Foothill College Widened Earthen Channel Alternative" for the two respective channel enlargements. These two alternative designs are aesthetically and biologically superior to the proposed project designs by allowing for full on-site revegetation mitigation of the entire channel and constructed floodplain, and eliminating the need for riprap, gabions, sacked concrete slope protection or other "hardscaping"

FEDERAL AND STATE AGENCIES

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 1), DATED DECEMBER 30, 1996

Response to Comment 1.1

This comment is included in the environmental record.

methods of construction. From an environmental impact and effective mitigation perspective, the Widened Earthen Channel Alternatives (C and D) are superior to the proposed project as amply described on pages 137-144 of the DEIR. We agree with the DEIR conclusion (page 144), that "The Widened Earthen Channel is the environmentally superior alternative since it would provide for the most complete restoration of the riparian habitat along Adobe Creek...Despite the greater land use impact of this alternative, on balance it is still the environmentally superior alternative because of its benefits to the Adobe Creek corridor." It should be noted that Alternatives C and D allow for full on-site riparian mitigation; whereas, constraints of the proposed project require that about 59 percent of the riparian mitigation be located off-site. On-site mitigation is preferable, more effective, and less costly compared to off-site mitigation.

The DEIR proposes riparian mitigation ratios of 1:1, 2:1, and 3:1 for low, medium, and high quality habitat impacted, respectively. These ratios are inconsistent with previous Department recommendations for this project. During the interagency field trip on January 26, 1995, Department Fishery Biologist, Ms. Margaret Roper, stated that the Department recommended riparian mitigation ratio is 3:1 by acreage. She also stated that with significant stands of non-native vegetation the Department would consider negotiating lower ratios. In the Department's Notice of Preparation letter to Terry Neudorf, SCVWD, (dated March 20, 1995) this topic is specifically addressed by the following: ← 1.2

> Riparian vegetation removed should be replaced on a 3:1 basis by acreage, using locally-obtained native species. *Replacement of non-native riparian vegetation should also be* on a 3:1 basis, except when, by vegetative mapping, it is demonstrated that a monotypic stand of non-native vegetation (i.e., eucalyptus) contributes significantly to the riparian corridor. Under this scenario, the Department would consider negotiating a lower riparian replacement ratio for the imported monotypic stands of non-native vegetation.

We have been consistent with this direction in conversations with the District and their consultants. In a March 27, 1995 memorandum to Carl Wilcox from Dan Stevens of H. T. Harvey & Associates, Mr. Stevens requested further discussions on this subject and provided a few photographs. However, the Department

---

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 1), DATED DECEMBER 30, 1996, cont.

Response to Comment 1.2

As referenced in the DEIR, the District's biological consultant conducted consultations with Mr Carl Wilcox of California Department of Fish and Game (CDFG) (March 27, 1995 pers. comm., see DEIR p. 151) centered on the mitigation ratio rationale of 1:1, 2:1, and 3:1 being applied to habitat impact areas based on specific vegetation and soil characteristics. Mr. Wilcox indicated that he agreed with the ratios and that the approach was valid for this project assuming that the results of the analysis were well-documented. It was not clearly understood that mapping would be required by CDFG, and due to the difficulty of mapping numerous small impact sites, which in many cases are obscured by overlying tree canopy, mapping was considered a poor tool for documenting impacts. Instead, the biological consultant recorded detailed field measurements, the results of which are provided in the DEIR in the form of numerous tables that show impacts by habitat category for each impact site (see, e.g., DEIR pp. 78-80, 82, 84-85). This information was considered adequate documentation of the project's impacts.

In response to Ms. Roper's reiteration of a mapping request, the District developed impact mapping of two of the larger impact sites, Foothill College and West Edith Avenue, to further substantiate the application of the mitigation ratios. The District's biological consultant met with Ms Roper on June 24, 1997 to discuss habitat impact mapping. The maps were submitted to CDFG in July 1997. In his letter dated August 20, 1997, Brian Hunter, Region 3 Regional Manager, CDFG, notified the District that the proposed mitigation ratios were acceptable to CDFG.

has never received any vegetation maps demonstrating monotypic stands of non-native vegetation. Since this information has not been provided, no negotiations with the Department for lower riparian mitigation ratios have occurred to date. Therefore, we will follow the direction we gave in the March 20, 1995 letter in conditioning the streambed alteration agreement. There will be a 3:1 riparian mitigation ratio by acreage conditioned, unless otherwise negotiated based on vegetation mapping information.

In addition, regardless of the final riparian mitigation ratios, under California Environmental Quality Act (CEQA) and streambed alteration agreement purview, the following conditions will apply:

1. The entire 2.31 acres shall consist of native mixed riparian forest habitat type of the highest habitat quality;
2. Revegetation shall maximize the continuous linear canopy and stream shading functions of the riparian corridor thus maximizing shaded riverine aquatic (SRA) cover functions and values;
3. Mitigation site configurations shall focus revegetation solely on the streamside areas consisting of the streambanks, top of banks, and immediate adjacent floodplain. Upland, inland sites are unacceptable because they will not provide in-kind streamside vegetation replacement;
4. Mitigation site planting, maintenance and monitoring requirements shall be explicitly defined and quantified in a Final Mitigation and Monitoring Plan approved by the Department.

Proposed riparian mitigation sites must be ecologically suitable for establishing and perpetuating high quality streamside mixed riparian forest habitat with high wildlife use value. The majority of the proposed Trust for Hidden Villa Mitigation Site (Reach 16, Station 619+50) fails to provide suitable area for streamside mitigation. As stated on page 99 of the DEIR, "The creek itself is heavily vegetated with native trees (primarily willows) and comprises high quality riparian 1.3

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 1), DATED DECEMBER 30, 1996, cont.

Response to Comment 1.3

The Hidden Villa site is no longer under consideration as a mitigation area The text of the DEIR has been revised to present this change in the project. The revised text is presented on page 111 in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR**, of this document habitat." The area available for revegetation consists of cleared lands located "...on high terraces situated 10-15 feet above the channel bottom." Major upland, inland portions of this site are not acceptable for in-kind streamside; thus, the site offers far less than the stated 1.0 acre for mitigation use.

Compatibility with adjacent uses is also an important factor in considering the suitability of mitigation sites. We have concerns about the compatibility of existing community park uses at the proposed West Edith Avenue Park Mitigation Site (Reach 5, Station 402+60). If this site must be used to achieve mitigation goals, we recommend mitigation be located solely in the portions of the site adjacent to the stream (providing SRA cover) and this area be fenced from the remainder of the park to minimize public access and disturbance. As acknowledged on DEIR page 32, "Increased human presence in proximity to fish and wildlife habitat generally lowers its ecological value." All mitigation sites should be protected from public access and disturbance to the greatest extent feasible. 1.4

The District is proposing to now establish a 0.29-acre riparian mitigation bank as mitigation for future environmental impacts associated with a 100-year general maintenance program on Adobe Creek. We concur with the concept and need for such a mitigation bank and the method of calculating the projected average annual mitigation requirement of 0.023 acre. However, we do not agree nor accept the District's use of "economic theory" to calculate the "present worth" (0.29 acre) of this annual mitigation requirement. Economic theory ignores complex ecological functions, values, and relationships associated with the biotic resources being impacted and mitigated. It is an inappropriate method for quantifying a mitigation bank. 1.5

We note that the District is currently preparing a mitigation bank proposal as an integral component of the Districtwide Maintenance Program Regulatory Project and associated Draft EIR and Section 404 Permit application to the Army Corps of Engineers. The District is not employing economic theory as a means for quantifying mitigation banks for the Maintenance Program Regulatory Project (Ms. Deborah Amshoff, SCVWD, personal communication). For purposes of promoting consistency in mitigation impacts of District maintenance programs, facilitating interagency consultations on such programs, and achieving District compliance with environmental

---

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 1), DATED DECEMBER 30, 1996, cont.

Response to Comment 1.4

The mitigation area within Edith Park will be fenced and include signage that identifies the area as a riparian restoration area. Additional details on the mitigation area will be included within the mitigation monitoring report to be prepared as part of the CDFG permit process.

Response to Comment 1.5

One shortcoming of many mitigation bank concepts is a failure to recognize the value of habitat which has been established before the credits are needed. You simply "withdraw" whatever credits are needed at the time it is required The District is proposing to establish a mitigation bank which in many circumstances would be years in advance of some of the expected future impacts. The proposal would operate following State and Federal examples, and would intend to take "withdrawals" that would account for an equivalent habitat value over the life of the project, including the pre-impact period, and the post-impact values. There is more incentive for the early establishment of a mitigation bank if there is credit or value received over the entire life of the site.

The Maintenance Program Regulatory Project Draft EIR is still in preparation and no decision has been made as to how impacts and mitigation will be determined.

laws and regulations, we recommend the District address Adobe Creek maintenance program mitigation requirements in the context of the Maintenance Program Regulatory Project. The Adobe Creek maintenance mitigation bank, as presently proposed, is unacceptable and in conflict with State and federal guidelines for establishment and operation of mitigation and conservation banks.

The DEIR erroneously concludes that project impacts to California red-legged frog (RLF) will be less than significant. As recognized in the DEIR (page 72), RLF probably are present upstream from the Foothill College site (reach 11). Project activities extend upstream through reach 16. The presence or absence of RLF and the potential for impacts to RLF in reaches 11 through 16 are unknown and not addressed because surveys for the species were not conducted. Such surveys were requested in the Department's Notice Of Preparation (NOP) letter of response. Although the District is proposing a preconstruction survey at the Foothill College site and the Corps of Engineers will initiate Endangered Species Act Section 7 consultation with the U. S. Fish and Wildlife Service during the project's permitting process, it remains that the DEIR fails to provide survey data and impact assessment analysis for potential impacts on RLF in reaches 11 through 16. There is no evidence of record supporting the DEIR conclusion that impacts to RLF will be less than significant. The DEIR is deficient on this subject and does not comply with CEQA Guidelines for impact assessment of listed species. – 1.6

The District proposes to make all streambed structures within the project limits passable to steelhead trout. This is a commendable action that could yield benefits in the event of future correction of downstream barriers. We question the validity of the out-of-kind mitigation claim that loss of undercut pool fish habitat is offset by the project's replacement of existing migrational barriers with structures that are passable to steelhead in recognition that steelhead will not be able to utilize the improvements due to remaining downstream barriers. This out-of-kind mitigation would have validity if the downstream barriers also were corrected as components of the proposed project's mitigation. Also, the DEIR is inconsistent in describing if the project area supports potential steelhead habitat: Page 71 states "...the project site does not support suitable habitat for the steelhead trout..." Whereas, Table 8 on page 62 states, "It is likely that suitable habitat on the sites exists." We concur with the latter assessment. – 1.7

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 1), DATED DECEMBER 30, 1996, cont.

Response to Comment 1.6

Surveys for red-legged frogs have been performed three times along Adobe Creek in the study reach. The first survey was conducted in March, August, and September 1994 and January 1995 during which all project areas were surveyed, as well as 0.25 miles upstream and downstream of the site, for fish, amphibians, and reptiles. In the period from July - October 1997 surveys were conducted from downstream of El Camino Real to Rhus Ridge Road. These surveys followed the 1997 protocol The results of these two surveys were provided to USFWS on March 9, 1998.

Based on a letter from USFWS dated May 27, 1998, the District has completed additional surveys upstream of Foothill Expressway These studies were conducted in September 1998. The results of this latest study were sent to the Corps and USFWS in October 1998.

None of the studies conducted has detected the presence of any red-legged frogs

The project portion of Adobe Creek is considered a dispersal sink. This assessment assumes that red-legged frogs occur in the better habitats of the creek upstream from the project site. Red-legged frogs from this upstream habitat could possibly be washed downstream during large storm events or otherwise move down the drainage form the better habitats into the project area. These individuals would not breed nor would they act as a colonizing source due to the lack of appropriate habitat, such as deep, quiet pools and emergent or dense riparian vegetation (see page 64 of the DEIR). High water flows during peak rainfall events would result in scouring and flushing of any egg masses and/or tadpoles out of the project area. After the rainy season, the creek, including most pools, dries out. It is therefore unlikely that red-legged frogs breed in the project area. In addition, frogs on the site would not be able to disperse to more suitable habitats due to the isolation of the project area from such habitats and the surrounding development.

Furthermore, project construction will occur in the dry season in a dry channel, so that may red-legged frog washed into the area the prior winter will already have perished in the dry streambed. One possible exception is the Foothill College channel modification site, which does have stream flow during most summers. Any frogs washed into this site are not expected to survive, however, due to the lack of deep pools and presence of many predators. Nonetheless, as discussed on page 72 of the DEIR, preconstruction surveys for red-legged frogs will be performed at the Foothill College site to ensure that no individuals are taken.

Response to Comment 1.7

The comment regarding in-kind mitigation for the loss of undercut pools is noted; however, the DEIR's conclusion that the loss of a small number of undercut pools is a less-than-significant effect remains valid in the opinion of the project's biological consultants The very small size of the loss of undercut pools and the fact that Adobe Creek supports minimal fisheries resources that might use such pools support this conclusion (see DEIR pp. 52-59, 64, 73). Thus, the DEIR never claimed that elimination of instream barriers is mitigation for the loss of undercut pools, because no mitigation is required for this less-than-significant impact. Nonetheless, the project channel modifications will clearly result in a significant improvement in fisheries habitat by removing barriers to fish movement in the project area and including pools as part of vortex rock weir design, as shown stated on page 74 of the DEIR.

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 1), DATED DECEMBER 30, 1996, cont

The comment is correct in noting an inconsistency between the table on page 62 and the statement on page 71. page 71 should state that while steelhead may be able to move into the project area, the presence of the species is considered unlikely. Steelhead would need to navigate through an outfall grill at the downstream end of Adobe Creek and up long stretches of concrete lined creek channel to move upstream. Although the NMFS believes that steelhead can successfully negotiate these potential barriers and move into the project area is marginal at best As noted on page 64 of the DEIR, steelhead trout prefer cool, perennial sections of relatively undisturbed streams with dense canopy cover. In contrast, Adobe Creek is a highly disturbed stream subject to intermittent flows and lacking deep pools. Water that remains in the summer and early fall is shallow and high water temperatures due in part to a lack of good canopy in many areas. Furthermore, project work will be conducted in the dry season. The text of the DEIR has been revised to clarify this information. The revised text is presented on page 103 in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR,** of this document.

As CEQA Trustee Agency for fish and wildlife resources, the Department recommends against certification of the DEIR until the Widened Earthen Channel Alternatives C and D (the environmentally superior alternative) are selected as the preferred project, surveys following U. S. Fish and Wildlife Service protocol are conducted and impact assessment analysis is completed for the California red-legged frog, and the other comments and concerns expressed in this letter are fully addressed. 1.8

Department personnel are available to discuss our comments. If you have questions or desire to schedule a meeting, please contact Margaret Roper, Fishery Biologist, at (408) 842-8917; or Carl Wilcox, Environmental Services Supervisor, at (707) 944-5525.

Sincerely,

Cindy Catacano
for Brian Hunter
Regional Manager
Region 3

cc: Mike Thaubault
U. S. Fish and Wildlife Service
3310 El Camino, Suite 130
Sacramento, California 95821-6340

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 1), DATED DECEMBER 30, 1996, cont.

Response to Comment 1.8

This comment is included in the environmental record. The commentor is referred to previous responses regarding the specific comment areas (issues).

STATE OF CALIFORNIA—THE RESOURCES AGENCY
PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
20 LOWER RAGSDALE DRIVE SUITE 100
MONTEREY CA 93940
(408) 649 2870

December 30, 1996

Mr. Scott Wilson
Adobe Creek Planning Study
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118

Dear Mr. Wilson:

Adobe Creek Watershed Planning Study Engineer's Report
and Draft Environmental Impact Report,
(SCH No. 95013041) Santa Clara County

This letter of comment is supplemental to the Department of Fish and Game's primary letter of comment on the Adobe Creek Watershed Planning Study Draft Environmental Impact Report (DEIR).

The Department is concerned about the District's proposed use of riprap, gabions, sacked concrete slope protection and other "hardscaping" methods of construction for project elements and the 100-year channel Maintenance Program. Gunite and sacked concrete slope protection provide no opportunity for revegetation of banks. Crib-walls, articulated concrete blocks, gabions and dense riprap offer very limited opportunity for herbaceous, weedy revegetation and rarely support any woody riparian restoration. The Department routinely recommends minimizing the use of such structures and methods and, as an alternative, using bioengineering/bioremediation techniques to restore eroding and failing banks. The DEIR correctly states on page 77 that "The loss or degradation of any mixed riparian forest within the riparian corridor, due to vegetation removal or the placement of gabions or riprap from the project is a significant impact,"and on page 81 that "The net loss of native soil channel banks from resurfacing with gabions, riprap, SCSP, and geocell is considered a significant impact." 2.1

Bioengineering slope protection measures to restore/re-contour eroding banks are available to the District in lieu of traditional "hardscaping" approaches. The District apparently rejects bioengineering methods and techniques on the basis of a criteria that such approaches are unacceptable for channel banks steeper than 2:1 slope and sites with peak flow velocities of 6 feet per second or greater (Engineer's Report, Chapter 8 - Maintenance Program). We disagree. This criteria arbitrarily eliminates many bioengineering methods and techniques from consideration, and steers the 2.2

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 2), DATED DECEMBER 30, 1996

Response to Comment 2.1

"Hardscape" methods of erosion repair are only proposed where softer methods are not applicable or would not be durable as determined through a systematic progressive site evaluation. For example, locations where rock riprap at the toe of the slope is proposed also specify that the rock will be infilled with soil, seeded and/or live staked after construction.

The comment is acknowledge. As stated on pages 83 and 104 of the DEIR, all impacts are mitigated to a less-than-significant level.

Response to Comment 2.2

This comment is included in the environmental record. The velocity and slope limitations placed on the various erosion repair methods are based on sound engineering judgement and extensive history of application. The District has tried to identify all possible measures and where each measure is most effective. The proposal is for a systematic progressive assessment for each site beginning with the "softer" techniques. Should CDFG provide specific comments and other authoritative research for any particular method, the District would reevaluate the limitations of alternative methods as shown *in the Engineer's Report.*

Mr. Scott Wilson
December 30, 1996
Page Two

District toward decisions to employ worst-case "hardscaping" methods. This is a deficiency in proposed project elements and the 100-year Maintenance Program. The District needs to reassess and consider a broader inclusion of bioengineering methods in the project elements and the Maintenance Program.

As proposed, the Maintenance Program and the District's overall preference for "hardscaping" methods for the project does not conform with the environmental protection policies of CEQA (Pub. Res. Code Section 21000-21001) nor the provisions requiring agencies to avoid or minimize environmental damage when feasible (CEQA Guidelines Sec. 15021 (a)). Greater use of bioengineering methods is feasible. In this context, the DEIR is inadequate for use by the Department of Fish and Game as Trustee Agency for fish and wildlife and as Responsible Agency for issuance of Streambed Alteration Agreements for the project pursuant to Fish and Game Code Sections 1600-1607. 2.3

Additionally, the District's emphasis on "hardscaping" methods and off-site riparian mitigation does not conform to State policies on protection of riparian resources as expressed in such legislative actions as the California Riparian Habitat Conservation Act (Fish and Game Code Section 1386). The District should reduce the amount of "hardscaping" proposed for Adobe Creek and implement bioengineering methods to a much greater extent. The Final EIR should reflect a greater emphasis on impact avoidance and adoption of environmentally sensitive bioengineering methods and techniques for channel stabilization. 2.4

Department personnel are available to discuss our comments. If you have questions or desire to schedule a meeting, please contact Margaret Roper, Fishery Biologist, at (408) 842-8917; or Carl Wilcox, Environmental Services Supervisor, at (707) 944-5525.

Sincerely,

Keith R. Anderson

Keith R. Anderson
Senior Fisheries Biologist
Region 3, South District

cc: Ms. Margaret Roper
Mr. Carl Wilcox
Ms. Jeannine DeWald

RESPONSES TO COMMENTS FROM THE STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME (Letter 2), DATED DECEMBER 30, 1996, cont.

Response to Comment 2.3

Please refer to the previous response to Comment 2.1

Response to Comment 2.4

Please refer to the previous response to Comment 2.1 and 2.3 As stated in these previous responses and in accordance with the California Environmental Quality Act, the approach to the project design was to avoid the impacts, to minimize the impacts, and then, mitigate the remaining impacts. In addition, since the mitigation sites are interspersed within the same riparian corridor and within the protect limits as the of impact sites, we consider them, for all intents and purposes, to be on-site mitigation

State of California
GOVERNOR'S OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO 95814

PETE WILSON
GOVERNOR

LEE GRISSOM
DIRECTOR

March 17, 1997

TERRY A. NEUDORF
SANTA CLARA VALLEY WATER DISTRICT
5750 ALMADEN EXPRESSWAY
SAN JOSE, CA 95118

Subject: ADOBE CREEK WATERSHED PROJECT SCH #: 95013041

Dear TERRY A. NEUDORF:

The State Clearinghouse submitted the above named environmental document to selected state agencies for review. The review period is closed and none of the state agencies have comments. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call at (916) 445-0613 if you have any questions regarding the environmental review process. When contacting the Clearinghouse in this matter, please use the eight-digit State Clearinghouse number so that we may respond promptly. 3.1

Sincerely,

Antero A. Rivasplata

ANTERO A. RIVASPLATA
Chief, State Clearinghouse

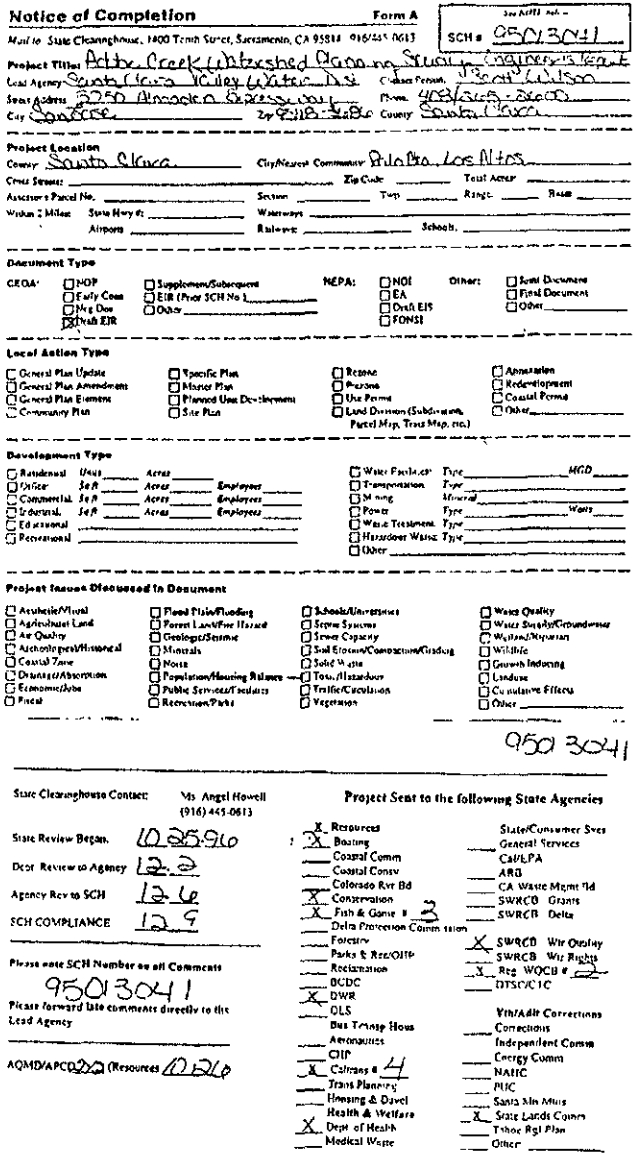
COMMENTS FROM THE STATE OF CALIFORNIA GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, DATED MARCH 17, 1997

Response to Comment 3.1

The comment pertains to the closure of the public review period of the Draft EIR. No response is required.

COMMENTS FROM THE STATE OF CALIFORNIA GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, DATED MARCH 17, 1997, cont.

ATTACHMENT TO THE STATE OF CALIFORNIA GOVERNOR'S OFFICE OF PLANNING AND RESEARCH



Notice of Completion Form A

SCH # 95013041

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

Project Title: Adobe Creek Watershed Planning Study, Engineer's Report
Lead Agency: Santa Clara Valley Water Dist Contact Person: Scott Wilson
Street Address: 5750 Almaden Expressway Phone: 408/265-2600
City: San Jose Zip: 95118-3686 County: Santa Clara

Project Location
County: Santa Clara City/Nearest Community: Palo Alto, Los Altos
Cross Streets: ______ Zip Code ______ Total Acres ______
Assessor's Parcel No. ______ Section ______ Twp ______ Range ______ Base ______
Within 2 Miles: State Hwy #: ______ Waterways ______
Airports ______ Railways ______ Schools ______

Document Type

CEQA:
☐ NOP
☐ Early Cons
☐ Neg Dec
☒ Draft EIR
☐ Supplement/Subsequent
☐ EIR (Prior SCH No.) ______
☐ Other ______

NEPA:
☐ NOI
☐ EA
☐ Draft EIS
☐ FONSI

Other:
☐ Joint Document
☐ Final Document
☐ Other ______

Local Action Type

☐ General Plan Update
☐ General Plan Amendment
☐ General Plan Element
☐ Community Plan
☐ Specific Plan
☐ Master Plan
☐ Planned Unit Development
☐ Site Plan
☐ Rezone
☐ Prezone
☐ Use Permit
☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.)
☐ Annexation
☐ Redevelopment
☐ Coastal Permit
☐ Other ______

Development Type

☐ Residential: Units ______ Acres ______
☐ Office: Sq.ft. ______ Acres ______ Employees ______
☐ Commercial: Sq.ft. ______ Acres ______ Employees ______
☐ Industrial: Sq.ft. ______ Acres ______ Employees ______
☐ Educational ______
☐ Recreational ______
☐ Water Facilities: Type ______ MGD ______
☐ Transportation: Type ______
☐ Mining: Mineral ______
☐ Power: Type ______ Watts ______
☐ Waste Treatment: Type ______
☐ Hazardous Waste: Type ______
☐ Other ______

Project Issues Discussed in Document

☐ Aesthetic/Visual
☐ Agricultural Land
☐ Air Quality
☐ Archeological/Historical
☐ Coastal Zone
☐ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☐ Flood Plain/Flooding
☐ Forest Land/Fire Hazard
☐ Geologic/Seismic
☐ Minerals
☐ Noise
☐ Population/Housing Balance
☐ Public Services/Facilities
☐ Recreation/Parks
☐ Schools/Universities
☐ Septic Systems
☐ Sewer Capacity
☐ Soil Erosion/Compaction/Grading
☐ Solid Waste
☐ Toxic/Hazardous
☐ Traffic/Circulation
☐ Vegetation
☐ Water Quality
☐ Water Supply/Groundwater
☐ Wetland/Riparian
☐ Wildlife
☐ Growth Inducing
☐ Landuse
☐ Cumulative Effects
☐ Other ______

95013041

State Clearinghouse Contact: Ms. Angel Howell
(916) 445-0613

State Review Began: 10-25-96
Dept. Review to Agency: 12-2
Agency Rev to SCH: 12-6
SCH COMPLIANCE: 12-9

Please note SCH Number on all Comments
95013041
Please forward late comments directly to the Lead Agency

AQMD/APCD 22 (Resources 10-26)

Project Sent to the following State Agencies

X Resources
X Boating
___ Coastal Comm
___ Coastal Consv
___ Colorado Rvr Bd
X Conservation
X Fish & Game # 3
___ Delta Protection Commission
___ Forestry
___ Parks & Rec/OHP
___ Reclamation
___ BCDC
X DWR
___ OES
Bus Transp Hous
___ Aeronautics
___ CHP
X Caltrans # 4
___ Trans Planning
___ Housing & Devel
Health & Welfare
X Dept. of Health
___ Medical Waste

State/Consumer Svcs
___ General Services
Cal/EPA
___ ARB
___ CA Waste Mgmt Bd
___ SWRCB Grants
___ SWRCB Delta
X SWRCB Wtr Quality
___ SWRCB Wtr Rights
X Reg WQCB # 2
___ DTSC/CTC

Yth/Adlt Corrections
___ Corrections
Independent Comm
___ Energy Comm
___ NAHC
___ PUC
___ Santa Mn Mtns
X State Lands Comm
___ Tahoe Rgl Plan
___ Other ______

LOS ALTOS HILLS
CALIFORNIA

23 1996

ORIGINAL DOCUMENT IN FILES

December 17, 1996

Randall R. Talley, P.E.
Supervising Engineer
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Re: Comments to the Adobe Creek Watershed Planning Study EIR dated August 1996

Dear Mr. Talley:

The Town of Los Altos Hills staff has reviewed the above referenced EIR which describes alternatives for correction of several flood control and maintenance problems along portions of Adobe Creek. Our review focused on the reaches contained partially or fully within Los Altos Hills.

In general, Staff is in agreement with the preferred alternatives which were identified in the document to be constructed in the Town. However, Town Staff has two main comments which relate to the proposed landscape mitigation described in Section II-D and the anticipated construction schedule shown in Table 9.1. 4.1

A portion of the mitigation planting proposed for this project includes placement of landscaping in the Town owned park on the southeast side of Edith Avenue. District Staff have discussed their intentions with Town Staff and have met with the Town's Environmental Design and Protection Committee (EDPC) to discuss the preliminary planting concept for the park. It is important that the final landscape design for this area be coordinated with the EDPC and Town Staff, with ultimate approval being granted by the City Council.

The Construction Staging schedule in the EIR anticipates that the construction of the Reach 5 improvements, between Foothill Expressway and Edith Avenue, will commence in FY 2000 pending dedication of the necessary easements. The Town of Los Altos Hills has been actively involved in the discussions leading up to the selection of the preferred alternate for this reach as well as the process for acquiring the necessary easements on the Los Altos Hills side of the project. The majority of the necessary easements have been conditioned to be granted by a subdivision along the creek which was recently approved by the City Council. Since these easements will located in the back yards of these future homes and the project is intended to provide flood protection to these lots, it is important 4.2

26379 Fremon
Los Altos Hills
California 94022
415/941-7222
Fax 415/941-3160

REGIONAL AND LOCAL AGENCIES

RESPONSE TO COMMENTS FROM THE TOWN OF LOS ALTOS HILLS, DATED DECEMBER 17, 1996

Response to Comment 4.1

This comment is included in the environmental record. The final design for the mitigation area proposed for Edith Park will be coordinated with Town Environmental Committee and Town Staff, and submitted for approval by the Town Council.

Response to Comment 4.2

The scheduled channel modification improvements to Reach 5 have been revised to be first on the construction priority list. This will be reflected in the final version of the Engineer's Report to the Town that the Reach 5 portion of the project be built as soon as possible. By this letter, the Town requests that the Reach 5 portion of the project be prioritized first with the construction scheduled as soon as possible.

If you or your staff have any questions regarding our comments, please give me a call at (415) 349-0794.

Sincerely,

Jeff Peterson

Jeff Peterson
City Manager/City Engineer

cc: Honorable Mayor and Members of the City Council
Environmental Design and Protection Committee

RESPONSE TO COMMENTS FROM THE TOWN OF LOS ALTOS HILLS, DATED DECEMBER 17, 1996, cont.

City of Palo Alto
Department of Planning and
Community Environment

SCVWD5DEC30'96PM 3:28

December 23, 1996

Terrence A. Neudorf
Santa Clara Valley Water District
5750 Almaden Expressway,
San Jose, CA 95118-3686

Planning Division

Subject: **City of Palo Alto Response to the Santa Clara Valley Water District Draft Environmental Impact Report for Adobe Creek Watershed Project**

Dear Terry,

Thank you for providing the City of Palo Alto with the opportunity to review and respond to the Draft Environmental Impact Report for the Adobe Creek watershed Project. Some of the proposed projects will occur within the city of Palo Alto. If any of the work requires city approval or permits, the city will be a responsible agency under CEQA. Therefore, the city is especially concerned that the environmental impacts of the project be accurately described, that impacts be avoided where possible, and that any unavoidable impacts be adequately mitigated, preferrably with in-kind on-site replacement.

Planning Commission and City Council Action. The Palo Alto Planning Commission and the Palo Alto City Council held public hearings on November 20 and December 16, 1996, respectively, to review the Draft EIR and receive comments from the public. Both the Planning Commission and the City Council voted unanimously to forward to the SCVWD the comments on the Draft EIR prepared by city staff and the city's consultant, as well as copies of letters received from members of the public and the Chamber of Commerce on this item.

In addition, the City Council directed city staff to follow the issue as a policy matter, and to urge policy makers at the Santa Clara Valley Water District to implement alternative stream bank stabilization measures being proposed by the city as mitigation in Items #1-#5 below. (See attached Action Minutes of the December 16, 1996, City Council meeting.)

Palo Alto Comprehensive Plan, and Palo Alto Tree Ordinance. The EIR identifies impacts and proposed mitigations that do not appear to be consistent with resource conservation and urban design policies and programs of the Palo Alto Comprehensive Plan, as outlined below. In addition, the city adopted in July, 1996, a Tree Ordinance

RESPONSE TO COMMENTS FROM THE CITY OF PALO ALTO, DATED DECEMBER 23, 1996

that protects Live oak and Valley oak trees over 11.5 inches in diameter. Some of the proposed project sites within Palo Alto may include protected trees.

Palo Alto Comprehensive Plan- Natural Resources and Open Space Elements The Natural Resources Element identifies the watersheds of all creeks in the city, including Adobe Creek, as natural resources to be protected, and further states as a conservation objective, "Prevention of damage to structures must be achieved with the least possible alteration of the natural ecology." Additional goals and policies related to conservation are located in the Open Space Element. This Element identifies the need "to preserve the ecological balance of the indigenous biotic communities and to maintain plant associations and wildlife habitat." Relevant Open Space Element goals and policies are:

> Goal #6: Protection and conservation of open spaces which are vital as wildlife habitat, and of areas of major or unique ecological significance.
>
> Policy #4: Protect conservation and scenic areas from deterioration or destruction by either private or public actions

The proposed use of gabion baskets and sack concrete, which have little or no revegetation potential, with proposed off-site mitigations, does not appear to be consistent with the city's goals and policies for protection and conservation of ecological and scenic qualities of wildlife areas. A project approach that seeks to *avoid damage* to wildlife habitat, with *in-kind on-site replacement* as the next preferred option, would be more consistent with the conservation objectives, goals and policies of the Palo Alto Comprehensive Plan.

Palo Alto Comprehensive Plan- Urban Design Element The Urban Design Element identifies the El Camino Real crossing of Adobe Creek as an important city gateway.

> Policy 7: Strengthen gateway identity.
>
> Program 23: Plant groves of tall trees and emphasize bridge structure and entrance sign at Palo Alto's south gateway on El Camino Real.

The graphic illustrating this program in the Comprehensive Plan calls for retaining the existing grove of trees on the downstream side of the bridge and adding dense tree planting upstream of the bridge to call attention to the riparian setting and heighten the gateway feeling.

As described on pages 7-5 and 7-6 of the Engineers Report, it is anticipated that the El Camino Real culvert will be a cooperative project with the City of Palo Alto to implement the gateway concept. The city has been working informally with the District on this project for the past two years and is very appreciative of District's willingness to collaborate on the project to accomplish the objectives of both jurisdictions. *However, we are concerned that the specific project design being proposed will make it difficult to achieve the objective of an attractive riparian gateway in this location*, since the project appears to remove existing riparian trees and shrubs both downstream of the bridge and for about 200 feet upstream of the bridge, and the gabion baskets proposed to line the creek banks in this location will not support plant materials necessary to reestablish a natural riparian appearance.

City Response to the Draft EIR. City staff has been assisted in their review of the Draft EIR by a consulting hydrologist and geomorphologist. In summary, the consultant concluded that: 1) *The City's natural resource conservation policies dictate an impact avoidance approach over impact minimization*. Where treatments are needed and avoidance is not practical, the next strategy should be to mitigate habitat impacts "on-site" and "in-kind. 2) Overall, the proposed treatments for Adobe Creek are too generalized for site conditions. *Opportunities to avoid impacts can be realized by conducting site-specific analyses*, rather than a broad Reach-by-Reach approach, and by incorporating principles and concepts of fluvial geomorphology (the scientific study of stream channels and the processes that form them). 3) *Where treatments are likely needed, there are suitable alternatives that reduce impacts and provide opportunities to restore habitat resources on site, rather than the proposed off site mitigations.*

The city's comments on the Draft EIR, as adopted by the Palo Alto City Council, include items #1- #12 below, and additional comments by the city's consultant found in Exhibit A attached to this letter.

1. Implement a mitigation program that incorporates an *impact avoidance approach* to planning specific design solutions for individual sites. This would be accomplished by conducting field and research analyses during the construction plan development. The program's objectives would include a consensus assessment of the risks associated with various alternatives, and the selection of treatments that best merge the District's objectives with the City's conservation policy goals. By incorporating this mitigation measure, the City will gain greater confidence that a site-specific impact avoidance analysis occurs in planning the project. This mitigation program will also help overcome an inherent difficulty of understanding important, site-specific details and aspects of the proposed treatments through an environmental document alone. A prime example is the use of habitat acreage in the document rather than a discussion of impacts on specific sites, on the continuity of habitat or on individual significant trees which are important according to the City's policies. 5.1

2. Conduct further research into alternative bank protection techniques that provide greater opportunities to avoid impacts or to mitigate them on site. The emphasis should be on those treatments that best minimize impacts and allow preservation of existing significant vegetation and/or proper conditions for 5.2

RESPONSE TO COMMENTS FROM THE CITY OF PALO ALTO, DATED DECEMBER 23, 1996, cont.

Response to Comment 5.1

The planning process that preceded the preparation of the project as presented in the DEIR integrated extensive impact assessment and project redesigns to first avoid and then, minimize impacts to sensitive resources. Consultant biologists and District staff conducted several rounds of detailed field surveys and design reviews to identify impacts of various design alternatives and to guide subsequent redesign efforts (see DEIR pages 70, 71 and 135). The result is the current project design, which first avoids impacts and represents significant reductions in the extent of habitat impacts. Public meetings were held during the planning process to solicit input from interested parties, and the DEIR itself is the central document and process for formally obtaining input. The District is thus utilizing the CEQA process for its original intent; namely, to develop a well-defined project, subject it to intensive environmental studies, and then submit the resulting information to the public and interested agencies for review and comment.

The DEIR provides numerous tables and text descriptions of the individual impact sites (see, e.g., DEIR pp. 5-15, 27-40, 53-58, 78-82, 84-85). Summaries are utilized to provide the reader with a clear overview of the project's impacts and mitigations.

Response to Comment 5.2

The transition zone for approximately 200 feet upstream of El Camino Real is presently concrete because of high velocities and turbulent flow. Gabions were selected to replace the concrete because they are structurally and hydraulically adequate and more aesthetic. In addition, the District will landscape in some gabions and the area on the top of the bank. These planted areas will have well established vegetation in just a few years, based on the District's experience with other mitigation sites. Also, please refer to response CDFG comments 2.1 and 2.2.

Based on a request from the City of Palo Alto, the amount and extent of gabions in the transition zone upstream of El Camino Real has been reduced.

A study conducted in 1997 by the District's biological consultants found that vegetation planted in a gabion system in Saratoga Creek supported a number of breeding bird species within a decade of planting. Please see District's web site for Saratoga Creek revegetation photos (http://www.scvwd gov/floodmgt/scfcpfrm.htm).

The study found that "after less than 10 years, the project supported 69 percent of the mean bird species richness and 44 percent of the mean bird abundance" of mature undisturbed creek areas.

vegetation growth This would include the use of fabric encapsulated soils, channel bank toe protection instead of full bank slope treatments, and other methods of sustaining riparian vegetation

3. Incorporate a geomorphic analysis of the proposed sites to· a) determine whether the channel is stable based upon regional stable channel relations; b) assess the channel forming processes and their relation to channel stability; c) identify treatments for site specific problems. 5.3

4. Conduct a detailed review of the proposed channel maintenance program to reflect the City's resource conservation policies. 5.4

5. Do not use gabion baskets, sack concrete or other "hard" bank protection materials in natural portions of the creek 5.5

6. The Draft EIR recognizes that "the loss or degradation of any mixed riparian forest within the riparian corridor, due to vegetation removal or the *placement of gabions or riprap* from the project, is a significant impact"(page 77 and page 81). The proposed project results in impacts on the riparian habitat along several thousand linear feet of the creek, with about 500 linear feet of the impacted area located in Palo Alto (projects in Reaches 1 and 2) The proposed mitigation for the impacts on riparian habitat resulting from all the proposed projects, including the projects in Palo Alto, is the establishment of mixed riparian forest on several identified mitigation sites contiguous with Adobe Creek, with a replacement ratio of 1:1 to 3 1, according to the existing habitat value of the impacted areas. 5.6a

   The following questions are raised about the adequacy of this approach and of the proposed mitigations:

   a) For project sites within Palo Alto, *avoidance of impacts*, followed by *in-kind on-site replacement* where impacts are necessary, would be more consistent with the policies and programs of the Natural Resources, Open Space, and Urban Design Elements of the Palo Alto Comprehensive Plan.

   b) All of the proposed mitigation sites are described as currently having some riparian habitat value, that is, they are not entirely new habitat areas The amount of mitigation acreage being provided appears to give full credit for the replacement habitat areas, rather than a prorated credit based on the incremental increase in habitat value of these mitigation sites. 5.6b

   c) Final success criteria for revegetation of the mitigation sites are not 5.6c

RESPONSE TO COMMENTS FROM THE CITY OF PALO ALTO, DATED DECEMBER 23, 1996, cont.

Response to Comment 5.3

The District by standard practice takes into account geomorphic principals and their effects in the analysis of channel modification and creek bank erosion repair alternatives The District does not feel that regional stable channel equations affect the replacement of a culvert such as El Camino Real. The location of the culvert is fixed and is therefore stable When evaluating erosion repair sites, the condition of the creek channel and the channel forming processes in that reach are analyzed and included in the choice of repair methods

Response to Comment 5.4

As stated on page 23 of the DEIR, the project would be consistent with the goals and policies of the City's Natural Environment Element, since the project would not result in an impact upon the conservation and restoration of streams and riparian zones or areas of special or unique ecological significance In addition, the project includes measures to minimize impacts on plants, animals, and water quality

Response to Comment 5.5

Please refer to the responses to California Department of Fish and Game comments 2 1, and 2.2

Response to Comment 5.6a

Please refer to the previous response to Comment 5.1 regarding impact avoidance and minimization in the project planning process that led up to the development of the DEIR. With respect to siting mitigation areas in the immediate vicinity of the impacts, every effort was made to identify suitable, available, mitigation sites at or near the major impact areas The high degree of urban stream embankment uses and extent of existing vegetation along Adobe Creek severely limit appropriate areas for riparian mitigation. Larger patches of contiguous riparian vegetation provide habitat of higher value to wildlife than smaller, isolated riparian sites The entire Palo Alto area was surveyed for mitigation sites along Adobe Creek No sites with suitable conditions and acreages were found In addition, please refer to the response to CDFG comment 2.4.

Response to Comment 5.6b

Any areas at the proposed mitigation sites with sufficient existing vegetation to support moderate wildlife use would not be counted as credit towards the mitigation target acreage. The proposed mitigation for riparian habitat impacts is based strictly on an acreage rated basis, e g 1 1 for low quality riparian habitat; therefore, any existing habitat value at the mitigation sites is not factored in nor taken credit for (see DEIR pp. 83-84)

Response to Comment 5.6c

As stated on page 103-104 of the DEIR, the detailed mitigation and monitoring plan to be submitted to the resource agencies for Corps section 404 and CDFG streambed alteration permits will contain specific success criteria.

identified in the EIR.

d) According to the EIR (page 105), the mitigation sites will not provide full riparian habitat value for at least 15-25 years after planting. The amount of mitigation acreage that is being provided does not appear to have been adjusted for this delayed replacement. 5.6d

e) The three types of habitat that are being lost, as described on pages 51-53, are: 1) mixed riparian forest (trees at or beyond top of bank); 2) riverine (channel bed and banks located within the ordinary high water level); and 3) scrub (special dry land vegetation habitat). These three types of habitat function as parts of an interrelated ecosystem. The EIR does not address the possible impacts on the habitat value of the creek corridor of losing primarily riverine habitat, but providing only mixed riparian forest habitat in the mitigation areas (page 105). 5.6e(i)

Nor does it address the possible reduced value of providing the mixed riparian forest at mitigation sites where the adjacent riverine habitat is of low quality, with minimal mutually supportive benefits, such as at Foothill College where mitigation planting is being proposed along a section of the creek bank where the adjacent riverine habitat will be of little value because the creek channel will be covered with rock riprap and the creek banks lined with gabions. 5.6e(ii)

f) This method of assessing impact on wildlife habitat by summing acres of affected habitat does not take into account the corridor characteristics of a riparian habitat, since it ignores the importance of continuity of the habitat corridor, and gives more weight to area than to the linear feet of creek that is affected. 5.6f

7. The EIR concludes that the project results in no significant aesthetic impact and so no mitigation is required (pages 118-122). However, it appears that there would be a significant change to the visual character of the creek as a result of the channel modification projects at Foothill College, at West Edith Avenue, and at El Camino Real. 5.7a

At the Foothill College site, approximately 1500 linear feet of the creek channel is being widened and both banks are being lined with gabions 6 feet up the bank. The EIR identifies the current habitat of this site as predominantly of high value (page 78). The EIR further states (page 81) that the proposed gabions are a "hard" *material that "would...inhibit the establishment of native* vegetation (both landscaping or natural recolonization)". (See photo simulations on page 122.) While replacement planting is being proposed beyond the top of creek bank, the widened creek channel and gabion-lined banks will not support 5.7b

RESPONSE TO COMMENTS FROM THE CITY OF PALO ALTO, DATED DECEMBER 23, 1996, cont.

Response to Comment 5.6d

Mitigation ratios greater than 1:1 (replacement:lost) are typically proposed to account for the delay in replacement of full riparian habitat values. Proposed mitigation with a ratio of 1:1 accounts for temporal losses of lower value habitats that can be more quickly replaced by riparian mitigation plantings

Response to Comment 5.6e(I)

As stated on page 75 of the DEIR, the current channel bed at the Foothill College site is mostly gunite, has little vegetation, steep or bare banks, and is thus of low biotic value. The surface of the proposed riprap channel bottom will quickly fill with sediment and support groundcover and emergent vegetation, thus replacing the habitat value. The existing natural channel bed at the culvert replacement sites supports very little vegetation, is usually dry, and is heavily disturbed by sporadic high velocity flows (see also DEIR p.75). These sites have low habitat values. Due to channel widening, post-project riverine habitat acreage will actually increase by 0.32 acres (DEIR p. 106). In addition, the establishment of riparian forest at the mitigation sites is proposed since that habitat supports very high wildlife use by a wide variety of species.

Response to Comment 5.6e(II)

Please refer to the previous response to Comment 5.6e(I). The mitigation proposed at the Foothill College site represents an improvement in habitat quality over the existing conditions. As discussed on page 54 of the DEIR, much of the existing channel banks and bottom are lined with concrete, gunite, and riprap. The mitigation will create higher quality riparian forest adjacent to the streambed, and the canopy from that vegetation will eventually provide shading of the stream.

Response to Comment 5.6f

Adobe Creek is currently highly fragmented and urbanized, and does not represent an intact riparian corridor. The linear feet of habitat loss represent minimal impacts to riparian corridor continuity, with the exception of the Foothill College and West Edith Avenue sites. At the latter two sites, the planting of the mitigation areas will replace and reinforce riparian corridor continuity. The available acreage and configuration of those sites, and the remaining mitigation sites, dictate the linear feet available for mitigation plantings along the streambed. All mitigation sites will be designed to maximize corridor continuity within the available acreage.

Response to Comment 5.7a

As stated on page 119 of the DEIR, West Edith Avenue (Reach 5), Foothill College (Reach 11), and immediately upstream of El Camino Real (Reach 1) are currently highly modified channels. The project would not have a significant aesthetic/visual impact at West Edith Avenue, Foothill College, and El Camino Real because the majority of the project (culvert replacement, erosion repair, and maintenance work) would occur within the top of bank of a previously disturbed channel. The native vegetation to be planted on the project sites will serve to improve the aesthetic characteristics over the existing bare gunite and wooden walls currently present in these reaches. The text of the DEIR has been revised to include a discussion of the potential visual and aesthetic impacts at El Camino Real. The revised text is presented on page 116 in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR**, of this document.

Response to Comment 5.7b

In response to these and other comments, the District has proposed a modification to the regulatory agencies for Reach 11 from what was proposed in the draft EIR and Engineer's Report which will eliminate almost all the gabions, only using them at the drop structures. The gabions would be replaced with a constant 2:1 sloped creek bank which will be protected by rock at the toe and buried 10-foot wide bands of rock up to the 10-year water surface every 40 feet along the proposed improvement reach. This proposed modification will allow planing at the toe of the bank and planting closer to the creek channel. The details of the new proposed plan for Reach 11 have been submitted to all the regulatory agencies involved in the Section 404 permit process

In addition, please refer to the previous response to Comment 5.7a the reestablishment of natural riparian vegetation, and the sharp, straight lines of the gabion embankments will become the predominant character of this part of the creek, rather than a natural riparian character. Since this site is located in a highly visible location at the entrance to a major community facility, such a change to the visual character of the creek would appear to constitute a significant alteration of an important scenic resource.

At the El Camino Real site, the first 100 feet upstream is mostly lined with concrete but includes several trees, and further upstream the banks are heavily covered with native riparian trees and shrubs. The proposed project appears to remove all vegetation on both banks for more than 200 feet upstream. There is currently a grove of redwood trees and other vegetation immediately downstream of the bridge, and it appears that they also would be removed by the project. This would have a similar effect as at the Foothill College site, to change the appearance of the creek from a primarily natural condition to one dominated by engineered structures. Since this project site is located at a major entrance to the city that is identified in the Comprehensive Plan for special treatment, this change to the appearance of the creek would substantially alter a significant scenic resource. - 5.7c

8. Revise the Regulated Habitats section of the EIR (page 67) to include the Palo Alto Tree Ordinance, adopted by the Palo Alto City Council in July, 1996. The Palo Alto Tree Ordinance protects Live oak and Valley oak trees that are *11.5* inches or more in diameter at 4.5 feet above natural grade. - 5.8

9. In Appendix C, the list of trees impacted at the El Camino Real culvert site does not include a number of trees that can be observed in the project area, including oaks, black locust, California pepper, redwoods and Ailanthus. - 5.9

10. Page 7-11 of the Engineer's Report and page 123 of the EIR incorrectly state that El Camino Real has four lanes of traffic. There are actually six lanes of through traffic and left turn lanes that would be impacted by the project. The document states that the sidewalk would be closed on alternate sides of the street during contruction phasing of the new El Camino Real Culvert. Temporary sidewalk facilities should be provided on both sides of the street throughout construction, and safe, unimpeded bicycle circulation should be provided. - 5.10a

In addition, the EIR should *address impacts on businesses* located near the project area. The District should coordinate the El Camino Real detour phasing with local business owners and should conduct a comprehensive public information outreach effort to keep affected business owners aware of the project status throughout the design and construction stages. Loss of on-street parking and visibility of storefronts should also be addressed. (See attached - 5.10b

RESPONSE TO COMMENTS FROM THE CITY OF PALO ALTO, DATED DECEMBER 23, 1996, cont.

Response to Comment 5.7c

The grove of redwood trees immediately downstream of the culvert is not slated for removal. Best management practices will be employed during construction to minimize tree damage or losses, as stated on page 7-3 of the Engineer's Report. The following tree protection measures should minimize impacts to these redwoods and other trees potentially impacted by the project: 1) Where feasible, prior to project construction at the site, measures such as orange safety fencing shall be installed around the dripline of the trees and maintained until completion of construction at the site. This measure will protect trunks from physical impact and avoid root severance and compaction. 2) Where fencing is not feasible, trunks shall be wrapped with furniture padding or be otherwise protected from equipment damage. If roots greater than 2" in diameter are damaged or cut, an arborist shall be consulted. Roots should be cut cleanly and smoothly without crushing, shattering, or tearing. Limbs greater than 2" in diameter and subject to removal shall be pruned just outside the branch collar. In addition, the trunks of the redwoods in question are located downstream of the transition structure that will be installed. Thus, the trunks will be outside the transition zone of impacts. Nonetheless, some roots and limbs may be trimmed during construction. Please refer also to the response to comment 5.9, below.

Response to Comment 5.8

The Regulated Habitats section of the DEIR has been revised to include a description of the Palo Alto Tree Ordinance. The revised text is presented on page 103 in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR**, of this document.

Response to Comment 5.9

Many of the trees at the El Camino Real culvert site will not be impacted by project construction. Please refer to Appendix C "Tree Stem Impacts" and Table 13 "Total Tree Stem Losses within Riparian Corridor Habitat", presented on pages 117 and 106, respectively, on page 117 in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR**, of this document. In an effort to reduce impacts at this highly visible location, District engineers redesigned the original site plan to reduce the culvert replacement impact area. Furthermore, mitigation is based on the acreage and quality of habitat impacted, not the specific number of trees impacted. Mitigation sites will be planted with native species in a manner designed to create high quality mixed riparian forest habitat. As a result, a higher number of trees will be replanted to cover the mitigation sites than would be impacted. For example, at the El Camino Real culvert site, 33 stems are estimated to be removed by the project. The mitigation ratios applied to the qualities of habitat impacted, however, result in the requirement for 6,727 square feet (sq. ft.) of mitigation area. Based upon estimates of planting trees on an optimum of 12 foot centers, approximately 47 appropriate native trees would be planted as mitigation (6,727 sq. ft. /144 sq. ft. per tree =46.7 trees).

Response to Comment 5.10a

The text of the DEIR and the Engineer's Report will be revised to correctly state that El Camino Real is a six lane roadway. The revised text is presented in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR**, of this document. In addition, the Engineer's Report will be revised

RESPONSE TO COMMENTS FROM THE CITY OF PALO ALTO, DATED DECEMBER 23, 1996, cont.

to identify methods to reduce the time of construction, and the closures of portions of the sidewalk and roadway These measures could include the use of incentive contracts and penalties for delays, cast in place concrete, pre-cast concrete segments, or the use of a temporary bridge over the entire project site.

Response to Comment 5.10b

The District will provide a letter to the local business owners which outlines the construction schedule. Periodically, trucks would block the visibility of the storefronts and access to on-street parking when they are staging to enter the construction area. As construction plans are developed, a key consideration will be the effect of the project construction on the neighboring businesses If the project is approved by the District Board, the District will work with affected residents, renters, and business owners when it is time to construct the culvert at El Camino Real, before and during the construction process.

letter from the Palo Alto Chamber of Commerce.)

11. There are several properties on Miranda Avenue, Miranda Green, and Moana Court that are currently in a FEMA-designated Special Flood Hazard Area (SFHA) due to projected flooding in the event of the 1% flood. The project will not eliminate these SFHA's due to the extensive impacts that would be required to eliminate the flood hazard. As a result of the District's study of Adobe Creek, will the new SFHA be larger or smaller than the currently mapped areas? Will the mapping be more accurate than the existing (i.e will base flood elevations be provided for the area at the end of Miranda Green?) 5.11

12. Pages 7-11 of the Draft EIR should be modified to reflect that the Hyatt Hotel is now back in operation, and the site, therefore, is not available for use by the SCVWD for any construction activities or access. The EIR should fully address location and impacts of all staging areas which would actually be used for the project. 5.12

Many of these issues were raised by the city in response to the Notice of Preparation of the EIR in a February 27, 1995, letter to the District. A copy of that letter is attached to this report.

We look forward to continuing to work with the District toward solutions that meet the District's flood control objectives and are, at the same time, consistent with the City's environmental and urban design policies. If you have any questions or comments about this letter, please call.

Sincerely,

Virginia Warheit

Virginia Warheit
Senior Planner

Attachments:

Exhibit A: Consultant's Comments
Action Agenda, December 16, 1996, Palo Alto City Council meeting
February 27, 1995 letter from Virginia Warheit to Santa Clara Valley Water District
November 18 and December 16, 1996 letters from Linda Elkind
November 20, 1996 letter from Santa Clara County Creeks Coalition
December 9, 1996 letter from Tony Carrasco
December 16, 1996 letter from Palo Alto Chamber of Commerce
December 16, 1996 letter from Dinah's Hotel Corporation

RESPONSE TO COMMENTS FROM THE CITY OF PALO ALTO, DATED DECEMBER 23, 1996, cont.

Response to Comment 5.11

The hydraulic studies conducted by the District were done in more detail than the existing flood insurance study. The base flood elevations will be determined and the floodplains remapped after project construction is complete. This information will be submitted to FEMA and a revision to the FEMA maps will be requested, based on the post-project conditions

Response to Comment 5.12

It is noted that the page 7-11 referred to in the comment is the Engineer's Report, rather than the Draft EIR text. The Engineer's Report will be revised to reflect the fact that the Hyatt Hotel is now back in operation as the Cabaña Hotel and is not available for use as a staging area. An alternative staging area has not been identified; however, various potential staging areas have been identified within the project vicinity.

cc: Kay Whitlock, Santa Clara Valley Water District, 5750 Almaden Expressway,
San Jose, CA 95118-3686
Scott Wilson, Santa Clara Valley Water District, 5750 Almaden Expressway,
San Jose, CA 95118-3686
Craig Breon, Santa Clara Valley Audobon Society, 22221 McClellan Road,
Cupertino,CA 95014
Doug Graham, 984 Illima Way, Palo Alto, CA 94306
Crystal Gamage, 1568 Channing Avenue, Palo Alto, CA 94303
Dena Mossar, 1024 Emerson Street, Palo Alto, CA 94301
Debbie Mytels, 2824 Louis Road, Palo Alto, CA 94303
Libby Lucas, 174 Yerba Center Avenue, Los Altos, CA 94022
Linda Elkind, Planning Commission, Town of Portola Valley, 765 Portola
Valley Road, Portola Valley, CA 94028
Margaret Roper, Biologist, Region 3, Department of Fish and Game, 7329,
Silverado Trail, Napa, CA 94558
City of Los Altos, attn. Larry Tong, Planning Director, 1, N. San Antonio
Road, Los Altos, CA 94022
City of Los Altos, attn. David Kornfield, Associate Planner, 1, N. San Antonio
Road, Los Altos, CA 94022
City of Los Altos Hills, attn.Curtis Williams, 26379 Fremont Road, Los Altos
Hills, CA 94022
Foothills College, attn. Bernadine Chuck Fong, President, 12345, El Monte
Road, Los Altos Hills, CA 94022-4599
Mike Rigney, San Francisco Estuary Institute, 1325 South 46th Street,
Richmond, CA 94804
Greg Zlotnick, 4168 Wallis Court, Palo Alto, CA 94306
Mitchell Swanson, 519 Seabright Avenue, Suite 210, Santa Cruz, CA 95062

RESPONSE TO COMMENTS FROM THE CITY OF PALO ALTO, DATED DECEMBER 23, 1996, cont.

EXHIBIT A

Mitchell Swanson
Hydrology & Geomorphology
519 Seabright Avenue, Suite 210 Santa Cruz, CA USA 95062
phone 408-427-0288 - fax 408-427-0472 email MSWAN@aol com

ATTACHMENT TO CITY OF

PALO ALTO LETTER

November 7, 1996

TO. *Virginia Warheit*, City of Palo Alto Department of Planning and Community Environment

FROM: Mitchell Swanson

RE: Comments on Adobe Creek EIR with respect to erosion control and Channel Modifications

Dear Virginia,

As requested, I have reviewed the Santa Clara Valley Water District's Adobe Creek Watershed Planning Study - Engineer's Report and EIR in light of the City of Palo Alto's conservation policies, specifically the Comprehensive Plan Policies and Programs and the Tree Ordinance. I have organized the following report into recommendations for commenting on the EIR followed by supporting general comments.

The City of Palo Alto's policies call for the protection of riparian habitat, large trees, wildlife habitat and related aesthetic and recreational resources. Much of the environmental quality of Adobe Creek stems from: 1) the occurrence of a canopy of tree cover (both native and non-native species) over the Creek; and 2) natural channel bed and banks. These resources are directly affected by the proposed project. The City's policies appear to emphasize an ***"avoidance of impacts"*** approach to planning flood control measures rather than the ***"minimize impacts"*** approach that has been taken in the EIR. In this regard, the primary task in this review is to determine whether feasible alternatives exist to meet *flood control* and *water quality* objectives while avoiding impacts to Adobe Creek's natural resources.

I conclude that there are many opportunities to avoid impacts and achieve the basic objectives of the District and the City. These may be realized by conducting intensive site-specific analyses, and by incorporating principles and concepts of fluvial geomorphology (the scientific study of stream channels and the processes that form them). Furthermore, where treatments are likely needed, I find that there are suitable alternatives that reduce impacts and provide greater opportunities to restore resources on site. To achieve such "optimal" solutions, I propose that the *following recommendations* be included in the City's comments on the EIR.

1) Implement a mitigation program that incorporates an ***impact avoidance*** approach to planning specific design solutions for individual sites. This would be accomplished by conducting field and research analyses during the construction plan development. The

EXHIBIT A

program's objectives would include a consensus determination of flood protection measures needed on a site-specific basis, an assessment of the risks associated with various alternatives, and the selection of treatments that best merge the District's objectives with the City's policy goals. By incorporating this mitigation measure, the City will gain greater confidence that a site-specific impact avoidance analysis occurs in planning the project. This mitigation program will also help overcome an inherent difficulty of understanding important, site-specific details and aspects of the proposed treatments through an environmental document alone. A prime example is the use of habitat acreage in the document rather than a discussion of impacts on specific sites and individual significant trees which are important to the City's policies.

2) Conduct further research into alternative bank protection techniques that provide greater opportunities to avoid impacts or to mitigate for them onsite. The emphasis should be on those treatments that best minimize impacts and allow preservation of existing significant vegetation and/or proper conditions for vegetation growth. This would include the use of fabric encapsulated soils, channel bank toe protection instead of full bank slope treatments and other methods of sustaining riparian vegetation.

3) Incorporate a geomorphic analysis of the proposed sites to: a) determine whether the channel is stable based upon regional stable channel relations; b) assess the channel forming processes and their relation to channel stability; c) identify treatments for site specific problems.

4) Conduct a detailed review of the proposed channel maintenance program to reflect the City's policies.

GENERAL COMMENTS

The Adobe Creek planning study proposes channel modifications to enlarge channel flood capacity, install erosion control structures, and update the maintenance program over 7.7 miles of Adobe Creek from El Camino Real upstream to Moody Road. This portion of the Adobe Creek flows through the communities of Palo Alto, Los Altos and Los Altos Hills. Simply stated, the objectives of the plan are to increase flood protection and reduce potential negative economic impacts due to flood damage while protecting the environment, mitigating significant environmental impacts and integrating the desires of the affected communities. Other objectives include water quality improvement and protection of water supplies. The inherent quality of Adobe Creek in the City of Palo Alto is also affected by activities (current and proposed) in the adjoining communities. An important example occurs just upstream of El Camino Real where large oaks occurring on the south bank of Adobe Creek in the City of Los Altos shade the creek on the City of Palo Alto's north side. Accordingly, the review I have conducted extends beyond the City limits

ATTACHMENT TO CITY OF

PALO ALTO LETTER

Identifying the Problem and Its Causes: Where is Treatment Needed?

Bank Erosion

The EIR presents a wide range of options for treating flood related problems at individual sites. The problems may fall roughly into erosion control measures for channel banks and the channel bed, expansion of channel flood capacity and expansion of the District's *maintenance activities to remove obstructing debris and sediment.*

To identify erosion problems and the causal processes, judgments must be made regarding the stability of the existing channel. One aspect of channel stability is the geomorphology of the stream which encompasses the natural processes of sediment deposition and erosional processes of the channel in question. In Adobe Creek, a canopy of shading trees and dry soils in summer months often results in bare soil banks. Trees grow on or atop the bank. Although the appearance of bare soils may immediately indicate a bank erosion problem, the bank may actually be stable because overall channel width is adjusted to the erosive forces and its "bareness" may be more related to plant *growing conditions rather than stability. If stable width exists,* the chances are less that a problem exists and the impacts and expense of treating the problem could be avoided.

Bed Erosion, Scour and Degradation

A second problem identified in the EIR is channel bed stability. Lowering of the channel bed due to downward erosion can undermine banks and infrastructure such as bridges, pipelines and bank protection works. Bed lowering where the bed meets the channel banks is a common cause of bank erosion. Long term bed erosion is termed *"channel bed degradation"* and is often a response to land use changes and modification of the stream by development. *"Scour"* is the short term lowering of the bed during a flood due to hydraulic erosive forces of flow. A judgment must be made to determine if bed stability at a particular site is a significant problem and whether it should be addressed at an individual site or over an entire reach. For a specific site, treatment may involve simply providing erosion protection at the toe of the bank which would not involve greater impacts in most cases. Using grade control over an entire reach my be more destructive, could lead to negative changes in hydraulics and channel stability, and may not relieve short term scour.

Treatment of Specific Sites rather than entire Reaches

In general, the Adobe Creek Plan proposes treatments over fairly broad reaches where significant problems may only occur over a fraction of the reach. The location of an erosion problem may be related to a short reach where the trajectory of flow attacks the outside bend of a bank. In the Adobe Creek Plan, concerns over hydraulic continuity of the proposed structure dictate that banks adjacent to unstable sites are treated in the same manner as those that exhibit stability. Some impacts may be avoided and flood protection objectives achieved by reducing the treatments to only those areas where it is absolutely needed. In addition, some alternative treatments, such as projecting hard points of rock, may reduce the risk that hardening one bank could cause erosion in an adjacent site.

A second set of actions involves replacement of existing substandard or failing erosion protection structures. In some cases these are obviously failing and require repair or replacement. In other cases, such as the vertical concrete wall located about 200 feet upstream of the El Camino Real crossing, replacement is occurring because the type of structure is not a conventional treatment. Some of these older structures are stable and support significant trees or stands of vegetation. Where older structures support significant resources, remedial installation of toe protection could avoid impacts and provide the necessary erosion control function.

Erosion Treatments

Bank Erosion

Bank erosion is often treated by increasing the resistance of the bank to erosion. Bank erosion often results from the erosion at the toe and mass failure of the upper bank. Often the hydraulic forces that cause overall bank failure are concentrated just a few feet above the channel bed. Thus, in many cases, toe protection may solve many problems where full slope bank protection is proposed. This would help avoid impacts and also provide vegetative opportunities.

The EIR places limits on vegetative treatments in bank protection structures based upon slopes greater than 2 horizontal to 1 vertical or projected flow velocities greater than 6 feet per second. There are technologies that can support steeper slopes using encapsulated soils and plantings. These treatments can involve more expense, but when combined with toe protection, they may be comparable in expense and effectiveness. **Attachment A** provides an example of the use of fabric encapsulated soils.

Bed Erosion

Treatment of bed erosion can range from a limited "grade control" of rock across selected portions of the channel bed to full-scale lining of the channel over an entire reach. Grade control can take many forms from vortex rock weirs to concrete lining Grade control can be useful in reducing the need for bank repair and can be aesthetically pleasing Wholesale lining can be destructive and expensive.

It is important to use grade control structures sparingly and only when absolutely necessary Placement of grade control affects the local channel slope and the dynamics of channel bed scour and sediment transport resulting in channel instability. Site specific geomorphic analysis can help ascertain whether grade control is necessary and whether

FROM : SWANSON HYDROLOGY GEOMORPHOLOG PHONE NO. : 408 427 0472 NOV 7,1996 8:29PM P 5
Received: 11/ 7/96 6:32PM; 408 427 0472 -> PLANNING; Page 5

ATTACHMENT TO CITY OF

PALO ALTO LETTER

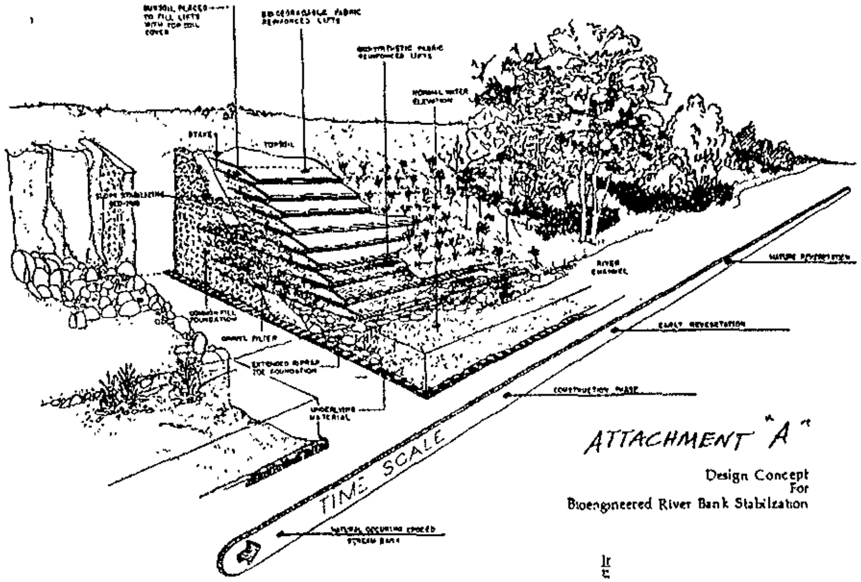
ATTACHMENT TO CITY OF

PALO ALTO LETTER

other treatments, such as extending bank protection below the channel bed, are just as effective.

Mitigation Opportunities

As described above, the City's policies dictate an impact avoidance approach over impact minimization. Where treatments are needed and avoidance is not practical, the next strategy should be to mitigation "on-site" and "in-kind" in terms of habitat. The mitigation usually involves planting trees to replace those lost to the treatment. The opportunities to plant trees within a bank protection structure is highly dependent upon the selected treatment. The mitigation recommendation proposing geomorphic analysis and research can help realize these opportunities.


SUBSOIL PLACED TO FILL LIFTS WITH TOP SOIL COVER
BIODEGRADABLE FABRIC REINFORCED LIFTS
GEOSYNTHETIC FABRIC REINFORCED LIFTS
NORMAL WATER ELEVATION
STAKE
TOPSOIL
SLOPE STABILIZING SEEDING
RIVER CHANNEL
MATURE REVEGETATION
COMMON FILL FOUNDATION
GRAVEL FILTER
EARLY REVEGETATION
EXTENDED RIPRAP TOE FOUNDATION
CONSTRUCTION PHASE
UNDERLYING MATERIAL
TIME SCALE
NATURAL OCCURRING ERODED STREAM BANK

ATTACHMENT "A"

Design Concept
For
Bioengineered River Bank Stabilization

ATTACHMENT

FROM : SWANSON HYDROLOGY GEOMORPHOLOGY PHONE NO. : 408 427 0472 NOV. 7 1996 8:29PM P 7

Received: 11/ 7/96 6:38PM; 408 427 0472 -> PLANNING; Page 7

ATTACHMENT TO CITY OF

PALO ALTO LETTER

draft

ACTION

Regular Meeting
December 16, 1996

The City Council of the City of Palo Alto met on this date in the Council Chambers at 7:12 p.m.

ROLL CALL

PRESENT: Andersen, Fazzino, Huber, Kniss, McCown, Rosenbaum, Schneider, Simitian, Wheeler

SPECIAL ORDERS OF THE DAY

1. Resolution 7638 entitled "Resolution of the Council of the City of Palo Alto Commending the Outstanding Public Service of Joe Simitian as Mayor and Council Member"

MOTION: Council Member Fazzino moved, seconded by Kniss, to adopt the Resolution.

MOTION PASSED 8-0-1, Simitian "abstaining."

ORAL COMMUNICATIONS

Cheryl Davis, 608 Channing Avenue, spoke regarding Americans with Disability issues, traffic, and trees.

Edmund Power, 2254 Dartmouth Street, spoke regarding responsibility (letter on file in the City Clerk's Office).

James Lewis, 1498 Edgewood Drive, spoke regarding year-end appreciation to the Council, staff, and the news media (letter on file in the City Clerk's Office).

Scott Wilson, 509 Hale Street, spoke regarding traffic.

COUNCIL MAKES EVERY EFFORT TO COMPLETE ALL AGENDA ITEMS BY 11:30 P.M. PRIOR TO TAKING A BREAK AT 9:30 P.M., COUNCIL WILL REVIEW THE REMAINING AGENDA ITEMS AND DETERMINE IF ANY ITEMS SHOULD BE POSTPONED TO A FUTURE DATE.

ATTACHMENT

SUBSTITUTE MOTION TO CONTINUE: Council Member Schneider moved, seconded by McCown, to continue the item to a Regular City Council meeting in January 1997.

SUBSTITUTE MOTION TO CONTINUE PASSED 7-2, Andersen, Fazzino "no."
date uncertain

PUBLIC HEARINGS

13. PUBLIC HEARING: Resolution 7642 entitled "Resolution of the Council of the City of Palo Alto Ordering Weed Nuisance Abated"

MOTION: Council Member Simitian moved, seconded by Schneider, to adopt the Resolution.

MOTION PASSED 9-0.

14. PUBLIC HEARING: Ordinance 4393 entitled "Ordinance of the Council of the City of Palo Alto Amending the Budget for the Fiscal Year 1996-97 to Accept a Block Grant from the United States Department of Justice Bureau of Justice Assistance for a Local Law Enforcement Program for the Police Department"

MOTION: Council Member Simitian moved, seconded by Kniss, to adopt the Ordinance.

MOTION PASSED 9-0.

REPORTS OF COMMITTEES AND COMMISSIONS

15. Planning Commission recommendation re the Draft Santa Clara Valley Water District Environmental Impact Report for Adobe Creek Water Shed Project

MOTION: Council Member McCown moved, seconded by Kniss, to direct staff to respond to the Santa Clara Valley Water District Draft EIR for the Adobe Creek Watershed Project with the City's response to include: 1) the comments recommended in the attached Planning Commission staff report; 2) Exhibit A prepared by the City's consultant; and 3) the comment added by the Planning Commission that sack concrete should not be used in natural portions of the Creek.

Further, that staff be directed to follow the issue as a policy matter and to urge the appropriate Santa Clara Valley Water District policy makers to allow for the implementation of the alternative mitigation measures as recommended for the stretch of the project that affects Palo Alto.

MAKER AND SECONDER AGREED TO INCORPORATE INTO THE MOTION that pages 7-11 of the Draft Environmental Impact Report be modified to reflect that the Hyatt site is not available for use by the Santa Clara Valley Water District (SCVWD) for any construction activities or access and that SCVWD fully address location and impacts of all staging areas which would actually be used for the project.

MOTION PASSED 9-0.

RECESS TO CLOSED SESSION: 9:55 P.M. - 10:15 P.M.

The City Council met in Closed Session to discuss matters involving potential/anticipated litigation as described in Agenda Item No. 11A.

Mayor Wheeler announced that regarding Item No. 11A, the City Council had taken unanimous action (9-0) to authorize a settlement payment to the Colorado Park Apartment tenants for damage incurred during the flooding that occurred on Tuesday, December 10, 1996.

RESOLUTIONS

ORDINANCES

REPORTS OF OFFICIALS

16. Resolution 7643 entitled "Resolution of the Council of the City of Palo Alto Amending Utility Rate Schedule G-3 of the City of Palo Alto Utilities Rates and Charges Pertaining to Non-Core Natural Gas Service"

MOTION: Council Member Andersen moved, seconded by Kniss, to adopt the Resolution.

MOTION PASSED 9-0.

17. Fourth Amendment to County Agreement between Santa Clara County and City of Palo Alto for Abatement of Weeds

MOTION: Vice Mayor Huber moved, seconded by Andersen, to authorize the Mayor to enter into the agreement that would provide the City of Palo Alto's continued participation in the County weed abatement program.

ATTACHMENT TO CITY OF

PALO ALTO LETTER

City of Palo Alto
Department of Planning and
Community Environment

Planning Division

February 27, 1995

Terry A Neudorf, Environmental Planner
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Subject: Adobe Creek Watershed Project-- EIR Notice of Preparation

Dear Terry:

Thank you for the opportunity to respond to the Notice of Preparation of the Environmental Impact Report for the Adobe Creek Watershed Project. The City of Palo Alto has a keen interest in Adobe Creek, which forms the southern boundary of our city and is one of three remaining creeks in Palo Alto still in a natural condition along all or part of its length from the Foothills to the Bay. All or part of Reaches 1-5 of the proposed project are located within the City of Palo Alto In addition, the city is concerned about flood control and environmental issues along the entire length of the creek corridor.

The City Planning Department and the Public Works Department submit the following comments for consideration in preparation of the project EIR·

1. The design and implementation plan for replacing the existing culvert under El Camino Real and rebuilding the upstream and down stream transition structures need to be developed in coordination with the City of Palo Alto for two reasons 1) This location is the gateway to the city from the south and is identified in the city's Comprehensive Plan as the location for a specially designed gateway feature. The city views the proposed replacement of the culvert as an opportunity to design a special entry to the city in this location and would like to work with the SCVWD to accomplish this; 2) The city is currently reviewing an entitlement application for the redevelopment of the Hyatt Hotel site on the north side of Adobe Creek at El Camino Real. The redevelopment project will need to address issues such as creek setbacks, access, planting along the creek, coordination with the city gateway feature, and traffic issues during construction, all of which will need to be coordinated with the Water District's plans in this location

2. Consider the effects of the proposed reconstruction of the El Camino Real culvert on local businesses and residents during construction (e g. loss of on-street parking, reduced visibility of storefronts and business signs, noise, dust, etc.)

P \SHARE\SCVWD.LTR

ATTACHMENT

ATTACHMENT TO CITY OF

PALO ALTO LETTER

3. Conduct an ambitious public information campaign to notify local businesses and residents about the proposed project.

4. Coordinate with the City of Palo Alto's Planning Department to determine the review process and schedule for the Environmental Impact Report and of subsequent implementation of the various phases of the project.

5. Adobe Creek is identified in the city's Comprehensive Plan as a natural resource and wildlife habitat area, and the Plan calls for the protection of these resources. Intervention should be conducted in a way that does not interrupt the continuous natural riparian corridor or reduce the habitat value of this very important natural system. Alternative methods to accomplish flood control and bank stabilization with the least impact on natural habitat should be used. Several project descriptions indicate gabion baskets are proposed. While some plants may be incorporated for an aesthetic effect, use of gabions generally does not allow for establishment of a natural riparian habitat, particularly the number and variety of plant materials essential to sustain a natural riparian system. Biotechnical creek intervention techniques should be used that leave existing riparian trees and shrubs along the creek banks in place wherever possible, and where banks must be altered and plants removed, a continuous high quality natural riparian system reestablished. Such techniques have been used successfully in the Bay Area and in other parts of the country.

6. The project description indicates a use of herbicides in the maintenance program. Trees and shrubs along the banks of natural streams shade out undergrowth within the stream channel, thus helping to keep it clear for flood water conveyance. Design alternatives that replicate natural systems and reduce the need for herbicides should be examined.

Again, thank you for the opportunity to comment on this notice of preparation. Please feel free to call me if you have any questions regarding our comments. We look forward to working together with you on this project.

Sincerely,

Virginia Warheit

VIRGINIA WARHEIT
Senior Planner
(415) 329-2364

cc. Planning Director, City of Los Altos
Mike Rigney, Coyote Creek Riparian Station
Ken Schreiber, Nancy Lytle, Jim Gilliland, Sarah Cheney, Lisa Grote,
Joseph Colonna, City of Palo Alto Planning Department staff
Joe Teresi, City of Palo Alto Public Works Engineering Division

P:\SHARE\SCVWD.LTR

ATTACHMENT TO CITY OF

PALO ALTO LETTER

LINDA V. ELKIND
14 Hawk View
Portola Valley, CA 94028

November 18, 1996

Chairman Bern Beecham and members of the Planning Commission
Palo Alto City Hall
250 Hamilton Ave
Palo Alto, CA 94301

Re: Response to the Santa Clara Valley Water District Draft EIR for Adobe Creek Watershed Project.

Dear Chairman Bern Beecham and members of the Planning Commission

The purpose of this letter is to urge that you recommend that the city council direct the city staff to forward staff comments on the Santa Clara Valley Water District Draft Environmental Impact Report for the Adobe Creek Watershed Project to the SCVWD.

The staff's report and comments and the "Attachment A" prepared by the city's consultant should be submitted to the SCVWD The comments point out many important precedent setting approaches to creek corridor management and flood control One particularly important point is the need "to preserve the ecological balance of the indigenous biotic communities and to maintain plant associations and wildlife habitat". This can only be achieved if the city avoids further impacts and requires that habitat impacts be mitigated on-site and "in-kind".

It is particularly important to point out that the opportunities to avoid impacts depend upon conducting "site-specific analyses and by incorporating principles and concepts of fluvial geomorphology (the scientific study of stream channels and the processes that form them)"

Please support the staffs comments about the adequacy of the proposed mitigation approach. Important issues raised by staff include.

1 Mitigation sites are not in Palo Alto
2. Mitigation site credits fail to reflect the incremental *increase in habitat* value of the sites.
3. Failure to include success criteria for Revegetation of the mitigation sites *Mitigation fails to succeed in many cases, because no criteria for enforcement are adopted*
4 Mitigation measures should provide continuity along the corridor and among the three types of habitat which function as parts of an interrelated ecosystem

As all of our towns struggle with the continued demands of urban development, it becomes essential that each community works together to protect and preserve the ecological integrity of the corridors within our jurisdictions Palo Alto's staff has shown particularly thoughtful and informed efforts in this area.

ATTACHMENT

ATTACHMENT TO CITY OF

PALO ALTO LETTER RESPONDING TO PALO ALTO

PLANNING COMMISSION STAFF REPORT

HAND DELIVERED

LINDA V. ELKIND
14 Hawk View
Portola Valley, CA 94028

CITY OF PALO ALTO, CA
CITY CLERK'S OFFICE
96 DEC 16 PM 4:58

December 16, 1996

Re Agenda Item 15.

Dear Mayor Wheeler and Members of the City Council,

I regret that due to a family committment, I am not able to attend tonight's meeting. However, I care deeply about how Palo Alto will respond to the DEIR for Adobe Creek.Watershed Project. As I wrote in my November 18 letter to the Planning Commission, I urge that you direct the city staff to forward staff comments on the Santa Clara Valley Water District's Draft EIR.

Palo Alto's staff and consultant have done a thoughtful and informed analysis of the issues.

Thank you for your consideration.
Sincerely,

Linda Elkind

RECEIVED
DEC 16 1996
OFFICE OF THE CITY MANAGER

ATTACHMENT TO CITY OF

PALO ALTO LETTER RESPONDING TO PALO ALTO

PLANNING COMMISSION STAFF REPORT

Dena Mossar
Santa Clara County Creeks
Coalition
1024 Emerson St.
Palo Alto, CA 94301
November 12, 1996

RECEIVED
NOV 20 1996
Department of Planning and
Community Environment

Bern Beecham
Palo Alto Planning Commission

Bern

I am writing to encourage you and the members of the Planning Commission to endorse the staff proposal that you recommend that City Council direct staff to respond to the Santa Clara Valley Water District Draft Environmental Impact Report for the Adobe Creek Watershed Project.

The city's response should include the comments recommended in the staff report and in Attachment A prepared by the city's consultant.

Staff and the consultant have completed a thorough review and given a well-reasoned response to the EIR. As the funding for flood control projects dries up, it becomes increasingly important for the water district to work cooperatively with all cities in each watershed. Staff's recommended comments are in keeping with this imperative.

I have attached a copy of the "Streamside Planting Guide for San Mateo and Santa Clara County Streams" for your personal reference. This booklet was developed by the Coyote Creek Riparian Station to guide citizens, city staff and policy makers in creating viable riparian habitat in both urban and rural areas.

Thank you for considering our request.

Sincerely,

Dena Mossar
for the Santa Clara County Creeks Coalition

ATTACHMENT

ATTACHMENT TO CITY OF

PALO ALTO LETTER RESPONDING TO PALO ALTO

PLANNING COMMISSION STAFF REPORT

cc: Members, Palo Alto Planning Commission
Santa Clara Valley Audubon Society
Committee for Green Foothills
Peninsula Conservation Center
Sierra Club, Loma Prieta Chapter
Bay Area Action
Coyote Creek Riparian Station
San Francisquito Creek Watershed Coordinated Resource Management Plan (CRMP)

ATTACHMENT TO CITY OF PALO ALTO LETTER RESPONDING TO PALO ALTO PLANNING COMMISSION STAFF REPORT

CARRASCO & ASSOCIATES

RECEIVED

DEC 9 1996

Department of Planning and
Community Environment

Hand Deliver

December 9, 1996

Palo Alto City Council
250 Hamilton Avenue
Palo Alto, CA 94301

re: Draft Environmental Impact Report for Adobe Creek Watershed Project

Dear Mayor Wheeler and members of the Council:

On behalf of our client, B. B. Patel, owner of the Palo Alto Cabaña hotel, we would like to express strong support of the Staff Report and Planning Commission recommendations on the above-referenced Draft EIR. The Palo Alto Cabaña hotel property abuts the Adobe Creek watershed for approximately 1,180 feet; thus, specific areas also concern our client as follows:

1. Public improvements within the SCVWD's right-of-way at Adobe Creek are the responsibility of the SCVWD. Mr Patel will not pay for any improvements within that right-of-way.

2. Decibel levels for construction noise as shown in the DEIR appear to be quite high, even though noted as being within Palo Alto's acceptable levels. As architects, it is our experience that this type of construction activity generates high noise levels. It is Mr. Patel's concern that these decibel levels will be very disturbing to hotel guests and will have a significant negative impact on hotel operations and occupancy.

3 Page 7-11 of the DEIR discusses staging for construction as potentially being on the "vacant" Hyatt site. Obviously, this document was prepared prior to Mr. Patel's purchase and re-opening of the Cabaña. Certainly the property is now not available for any use by SCVWD for any construction activities or access. We would expect to see the DEIR modified to delete this statement and to fully address location and impacts of all staging areas which would actually be used for the project

4. It is not clear in the DEIR what is actually planned for the El Camino overcrossing of Adobe Creek. Is the bridge and/or its guardrail being replaced? If so, what design is being considered? It is also not clear what is meant by "working with the City". We would like to see the existing bridge rail design maintained, as it has a "modern" appearance which is compatible with the architecture of the Palo Alto Cabaña hotel.

   If the guardrail is being extended due to culvert construction, we would like to see it remain the same as existing, or if not possible due to current codes, it should be very similar in design We would expect to see the DEIR modified to fully address the proposed design for the bridge and guardrail

ATTACHMENT

ATTACHMENT TO CITY OF

PALO ALTO LETTER RESPONDING TO PALO ALTO

PLANNING COMMISSION STAFF REPORT

Mr Patel and Carrasco & Associates share the Planning Commission's and staff's concerns regarding the aesthetics of the gabion solution to creek bank stabilization. Loss of riparian habitat and the harsh appearance of a concrete structure will negatively impact the aesthetic of the existing creek. An effort should be made by SCVWD to maintain the natural appearance of the creek environs while solving the engineering problems.

Very truly yours,

Tony Carrasco

Tony Carrasco AIA

cc: Terry Neudorf, SCVWD
Scott Wilson, SCVWD
Virginia Warheit
B. B. Patel

ATTACHMENT TO CITY OF

PALO ALTO LETTER RESPONDING TO PALO ALTO

PLANNING COMMISSION STAFF REPORT

PALO ALTO
CHAMBER OF
COMMERCE

BOARD OF DIRECTORS
President
JEFFREY L. VAILLANT
Electric Power Research Institute
President Elect
BARBARA GROSS
Great Western Bank
Vice Presidents
PATRICIA KUNZ
Stanford Park Hotel
JIM MICKELSON
Hewlett Packard Company
RICK STERN
Stern Mortgage Company
PAUL WRIGHT
JM Perry Corporation
Past President
KATHLEEN GWYNN
Senior Coordinating Council
of the Palo Alto Area
•
JANE ALHOUSE-GEE
Alhouse King Realty
JIM BALBONI
Otis Elevator
BETSY BECHTEL
Citibank
CLEMENT CHEN III
Holiday Inn Palo Alto / Stanford
MIKE COBB
Mike Cobb Associates
GEORGIE GLEIM
Gleim the Jeweler
LARRY HORTON
Stanford University
CHARLES E. KEENAN III
Keenan Land Company
JEANNE LABOZETTA
Family Service Mid-Peninsula
LENI LANE
Lane Travel Center, Inc.
JANET R. LEDERER
Palo Alto Medical Foundation
DAVID LONGBINE
Stanford Shopping Center
NANCY PETERSON
Roche Bioscience
RICHARD H. SCHWARTZ
Attorney at Law
GLENN SINGLETON
Pacific Educational Group, Inc
PETER TABER
Hobee's Restaurants
GARY WOHL
Gunderson Dettmer Stough, et al.
-
Executive Director
SUSAN FRANK

HAND DELIVERED

CITY OF PALO ALTO, CA
CITY CLERK'S OFFICE
96 DEC 16 AM 9:42

15

RECEIVED
DEC 16 1996
CITY MANAGER'S OFFICE

December 16, 1996

Mayor Lanie Wheeler and Palo Alto City Council
250 Hamilton Avenue
Palo Alto, CA 94301

re: **Draft Environmental Impact Report for Adobe Creek Watershed Project**

Dear Mayor Wheeler and Council members,

On behalf of the Palo Alto Chamber of Commerce, I would like to express concerns about the Draft EIR for the Adobe Creek Watershed Project. (It should be noted that the staff report regarding Adobe Creek is excellent, as are the Planning Commission recommendations.)

As you know, the Chamber was involved in the Matadero Creek Project which was completed earlier this year. That project, originally slated to be completed in fifteen months, took over two-and-a-half years with severe impacts felt by nearly all the businesses in the affected area. At least one business closed as a direct result of the construction and others are still recovering.

In examining the EIR, I noticed several items which brought to mind similarities to Matadero Creek, from the construction of a box culvert with roughly the same project time frame, to high noise levels, to the staging of the project in the heart of a business district. The Water District does not address these issues satisfactorily in the EIR which raises concerns, yet again, about how they will address the impacts on the businesses in the area.

While I would like to give the District the benefit of the doubt, I am hopeful that the Council will send a strong message to them that what occurred at Matadero Creek must not occur again. The predictability of construction is a key element to the businesses and clear communication is paramount. The businesses in the affected area deserve equal attention to that of the residents.

The Chamber is willing to work with both the City and the Water District in whatever capacity to ensure a successful project with minimal impacts on businesses in the area. I hope that you will communicate this to the District as well as the Chamber's concerns. Thank you for your consideration.

Sincerely,

Susan Frank

Susan Frank
Executive Director

325 Forest Avenue Palo Alto, California 94301-2515 415/324-3121 Fax 415/324-1215

ATTACHMENT

ATTACHMENT TO CITY OF PALO ALTO LETTER RESPONDING TO PALO ALTO PLANNING COMMISSION STAFF REPORT

Dinah's

Executive Offices

HAND DELIVERED

RECEIVED
DEC 16 1996
OFFICE OF THE CITY MANAGER

CITY OF PALO ALTO, CA
CITY CLERK'S OFFICE
96 DEC 16 PM 1:12

December 16, 1996

Members of City Council
Palo Alto, California

Re: Construction of a new culvert and bridge on Adobe Creek and El Camino Real as proposed by the Santa Clara Water District.

Dear Council Members:

In your deliberations on the Santa Clara Valley Water District's above proposal, I ask that you seriously consider the deleterious effect this construction will have on Dinah's Garden Hotel and its two on-site restaurants (one opening in 1997)

It has been reported that the Water District has not addressed the impact this construction will have on the local businesses. Considering the havoc created by the construction of the Matadero bridge, I feel it is imperative that the Water District take into account the damage this project will cause.

If the project is inevitable, I ask not only that a strict schedule be adhered to, but also that every aspect of financial consequence be considered. If this project goes over the projected completion time, there should be a financial penalty, the proceeds of which would go to the affected property owners. During the Matadero construction, restaurants and area merchants suffered tremendously while the project's completion was delayed for almost a year! This Adobe Creek venture appears to be once again "engineer driven" without consideration of the area's businesses.

Please address these concerns in your communications with the Santa Clara Valley Water District

Sincerely,

Ray Handley
Raymond G. Handley
President

cc: Mr. Randall R. Talley, P.E.
Santa Clara Valley Water District

Dinah's Hotel Corporation
4261 El Camino Real
Palo Alto, California 94306

415 • 493 • 2844
Fax 415 • 856 • 4713
800 • 227 • 8220

ATTACHMENT

ATTACHMENT TO CITY OF

PALO ALTO LETTER RESPONDING TO PALO ALTO

PLANNING COMMISSION STAFF REPORT

PUBLIC UTILITIES COMMISSION
CITY AND COUNTY OF SAN FRANCISCO

HETCH HETCHY
WATER AND POWER

SAN FRANCISCO
WATER DEPARTMENT

SAN FRANCISCO
CLEAN WATER PROGRAM

WILLIE L. BROWN, JR.
MAYOR

ANSON B. MORAN
GENERAL MANAGER

December 27, 1996

Mr. Scott Wilson
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

RE: Adobe Creek Watershed Planning Study Draft Environmental Impact Report (DEIR)

Dear Mr. Wilson:

The proposed Study addresses flood control improvements within Adobe Creek from El Camino Real to upstream of Moody Road in the City of Palo Alto. The proposed project provides flood protection, where feasible, and creek stabilization The project consists of a combination of channel modifications, culvert replacements and creek bank erosion repairs.

The San Francisco Public Utilities Commission (SF PUC) is concerned about potential impacts to its potable water transmission pipelines from the proposed project SF PUC's Bay Division Pipelines No 3 & 4 bisect the proposed flood control project at *approximately Arastradero Road and Lunada Drive. No where in the document is there* mention of the existence of SF PUC's pipelines except in Chapter 7, "Description of the Recommended Project" where the SF PUC pipeline is used as a demarcation for the end of reach 1 and the beginning of reach 2. It does not discuss whether any work is proposed to occur adjacent to or beneath the pipelines, or if any potential impacts to the pipelines have been identified. Therefore, it is very unclear what proposed flood control work, if any, will occur at the same location in Adobe Creek where the pipelines are located. I reviewed the above DEIR document and offer the following comments based upon this non-clarity.

Comments:

1. Chapter 1 - Summary This chapter does not identify SF PUC's two transmission *pipelines that cross the proposed project area.* 6.1

2. Chapter 3 - Problem Definition, Maintenance Concerns Section. This Chapter does 6.2

RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO PUBLIC UTILITIES COMMISSION, DATED DECEMBER 27, 1996

Response to Comments 6.1-6.6

The Hetch Hetchy Pipeline is described and their location is identified on page 27 and 28 (Figure 6) of the DEIR. No improvements or maintenance is planned near or adjacent to the Hetch Hetchy Pipelines. Text will be added to the maintenance program chapter of the Engineer's Report that will describe the location of the pipelines as a maintenance constraint

Mr Scott Wilson
December 27, 1996
page 2

not identify SF PUC's two transmission pipelines that cross the proposed project area and pipelines potential impacts to the project's proposed maintenance activities.

3. Chapter 5 - Flood Protection Project Elements: In the section "Alternative Solutions by Reach", the DEIR document does not identify the existence of SF PUC's pipelines or potential impacts of the proposed project on the pipelines. 6.3

4. Chapter 6 - Erosion Control Project Elements: Table 6.1 describes each reach of the proposed work. Again, no mention is made of SF PUC's pipelines 6.4

5. Chapter 7 - Description of the Recommended Project: As mentioned above, the only mention of SF PUC's pipelines is the point where reach 1 end and reach 2 begins. Again, there is no discussion of whether any work will occur adjacent to or beneath the pipelines. There is no discussion of impacts to the pipelines associated with the proposed work 6.5

The same comments can be said of the discussion of reach 2 proposed work.

6. Chapter 8 - Maintenance Program: It is not clear from this chapter's discussion of proposed maintenance of the completed project if there will be any impacts to SF PUC's pipelines. 6.6

I hope that my comments are clear and will encourage your agency to review the DEIR document to assure our concerns are addressed adequately If you have any questions, please contact me at (415) 923-2477

Sincerely,

Darwin L. Helmuth

Darwin L. Helmuth
Bureau of Environmental & Regulatory
Management
San Francisco Public Utilities
Commission

cc Paul Deutsch, SF Planning Dept.

CITY OF LOS ALTOS
One North San Antonio Road
Los Altos, California 94022-3088
Tel: (415) 948-1491
Fax: (415) 941-7419

January 2, 1997

Scott Wilson, Adobe Creek Planning Study
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Dear Mr. Wilson:

Thank you for giving us the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Adobe Creek Watershed Planning Study. The City of Los Altos Planning Department previously responded to the Notice of Preparation (NOP) for the DEIR in February and May of 1995. Our review of the Draft EIR finds there to be inadequate information and discussion with respect to the following issues brought forth in our NOP comments:

Business Impacts: The potential effects of the project on local businesses in the vicinity of the El Camino Real culvert during the construction period are not identified in the "Construction-Related Impacts" section on page 123. These potential impacts would occur from the loss of on-street parking and difficult or restricted access due to the modified traffic flows on El Camino Real. The Engineer's Report states on page 5-12 that "traffic disruption would be a significant impact due to this alternative." 7.1

The DEIR states on page 123 that construction impacts would be "short-term", yet the DEIR indicates that the construction phase which includes the El Camino Real culvert could take up to 2 years to complete. We feel it is inappropriate for the DEIR to state that construction impacts would be short-term (and therefore insignificant) when "the precise duration of project construction is not known at this time." 7.2

Our comments in response to the NOP suggested that the District develop and implement an aggressive program to notify local businesses about the proposed project and obtain their input 7.3
in regards to project design and implementation. In this regard, the DEIR should include a figure showing the proposed traffic re-routing plans for EL Camino Real traffic in relation to 7.4
the driveways and parking for adjacent businesses.

Our comments with regard to this issue are made with the hope of avoiding a repetition of the severe impacts experienced by businesses in the vicinity of San Francisquito Creek in Palo Alto when the culvert under EL Camino Real was replaced. We believe the project should be sensitive to the needs of businesses on El Camino Real near Adobe Creek for reasonable and uninterrupted customer access during construction. 7.5

RESPONSES TO COMMENTS FROM THE CITY OF LOS ALTOS, DATED JANUARY 2, 1997

Response to Comment 7.1

This issue was discussed on pages 123-125 of the Draft EIR. For a detailed response please refer to the response to City of Palo Alto Comment 5 10b.

Response to Comment 7.2

The construction at El Camino Real is estimated to take two construction phases to complete The impacts on the local businesses will not be continuous and will not be permanent. Therefore, the impacts upon businesses are considered to be a short-term impact. In addition, the Engineer's Report will be revised to identify methods to reduce the time of construction, and the closures of portions of the sidewalk and roadway. These measures could include the use of incentive contracts and penalties for delays, cast-in-place concrete, pre-cast concrete segments, or the use of a temporary bridge over the entire project site.

Response to Comment 7.3

Please refer to the response to City of Palo Alto Comment 5.10b.

Response to Comment 7.4

The traffic rerouting plan depends on what method of construction is selected for the culvert, and state and local regulations. Until all these constraints and requirements are determined during the project design phase (after approval by the District Board of Directors), a definitive traffic rerouting plan cannot be done. Please refer to the previous response to Comment 7.2.

Response to Comment 7.5

The District has and will continue to coordinate with the City of Los Altos throughout the design and construction of these improvements. Please refer to the previous response to the City of Palo Alto comment 5.10b.

Future City Entry Point: It was noted in the DEIR that the culvert replacement at Adobe Creek and El Camino Real will be a cooperative effort with the City of Palo Alto to implement their "Palo Alto Gateway" conceptual plan. Our NOP comments indicated that this location is also a gateway point for the City of Los Altos, and requested that the District coordinate the design and implementation of the El Camino Real culvert with Los Altos to ensure that the completed project is compatible with our community's vision for an appropriate gateway feature. 7.6

Privacy & Security: We appreciate that the project scope does not include provisions for public access along the creek adjoining private properties, and that the DEIR included discussion of the potential impacts to private property related to security fencing, privacy, trespassing and related issues. 7.7

Our experience indicates that most Los Altos residents seem to tolerate short-term construction impacts better when they are kept informed of what is (or will be) happening. We strongly encourage the district to continue to work with affected Los Altos residents to provide clear and up-to-date information regarding construction and maintenance work.

Visual Impacts: The proposed gabions for bank stabilization are much preferred to concrete-lined channels. The gabions in highly visible locations should be re-vegetated as much as possible within a reasonable period following their installation. 7.8

Thank you in advance for addressing these comments in the Final EIR. Comments on the Engineer's Report will be provided separately by our Engineering Department. We look forward to continue working cooperatively with the District on this project.

Please feel free to call me at (415) 948-2790, x211 if you have questions or if you need more information.

Sincerely,

James D. Mackenzie

James D. Mackenzie, AICP
Senior Planner

cc: Larry Tong, Planning Director
Bruce Bane, Director of Public Works
Layne Long, Environmental Committee Staff Liaison

RESPONSES TO COMMENTS FROM THE CITY OF LOS ALTOS, DATED JANUARY 2, 1997, cont.

Response to Comment 7.6

The District has been working with Bruce Bane and Landy Darrow of the City of Los Altos Staff throughout the plan preparation. The District plans to incorporate the City of Palo Alto's conceptual gateway plan into the culvert design and will include a gateway plan conceptual drawing in the final version of the Engineer's Report

Response to Comment 7.7

The neighbors adjacent to improvement areas along Adobe Creek will receive written notification outlining the potential timing of the planned construction along their Reach of Adobe Creek. However, the maintenance within the creek will happen routinely as necessary, and no such notification will be provided except to the directly affected property owner(s).

Response to Comment 7.8

The use of concrete-lined channels has been minimized in the proposed plan. The District will use gabions as bank stabilization wherever possible. These gabions will be revegetated after installation. Please refer to the response to City of Palo Alto comment 5.7a.

Cal/EPA

San Francisco Bay Regional Water Quality Control Board

2101 Webster Street
Suite 500
Oakland, CA 94612
(510) 286-1255
FAX (510) 286-1380

Pete Wilson
Governor

Date: April 7, 1997
File No 2188.04(KM)

Mr Terrence Neudrof
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Subject: Adobe Creek Watershed Planning Study Consisting of the Engineer's Report and Draft Environmental Impact Report

Dear Mr. Neudrof:

Thank you for your submittal of the subject study. The study and the analyses presented in the study provide an excellent compilation of pertinent environmental data, project impacts, and alternative analysis.

We realize that this effort has required a great deal of pioneering work and exercise of professional experience and judgment by the District's staff. Overall, we feel the results are valid and very helpful in evaluating environmental impacts of the projects As a result, the Regional Board can expedite your permit request review We offer the following comments for consideration in your preparation of your Final Environmental Impact Report:

- The Basin Plan requires that wetland impacts be avoided if possible, and, if not possible, be minimized to the maximum extent possible. Mitigation for impacted wetland acreage and values should be considered only after the wetland impacts have been minimized. Except Interstate 280 to Elmonte Road (Reach 10 and 11), the alternative analysis of the study has provided a good base for avoidance and minimization analysis for each reach The Board staff does not believe that the preferred alternative (Alternative #1) for Reach 10-11 minimizes the wetland impacts. The proposed Fluvial Geomorphology Plan (Alternative #6) has many benefits in that it recreates a natural, self-maintaining, meandering channel. In addition, we feel the Fluvial Geomorphology Plan is economically feasible. 8.1 8.2

- *The proposed maintenance program and mitigation plan provide valuable information.* However, the Board prefers to address these issues during permit review process. 8.3

We appreciate the District's efforts to date and look forward to continuing to work with you on this matter. If you have any questions, please call me at (510) 286-0429.

Sincerely,

Keyvan Moghbel

Keyvan Moghbel
Associate Engineer

RESPONSES TO COMMENTS FROM THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD, APRIL 7, 1997

Response to Comment 8.1

The District provided preliminary project designs to its consulting biologists who then conducted impact assessments. Based upon the results of these initial assessments, the District redesigned the project to significantly reduce impacts to biotic resources, including jurisdictional areas. All of the alternatives in Reaches 10 and 11 entail similar impacts to wetlands because they all require extensive disturbance to the existing channel bottom and associated wetlands. Please refer to response to City of Palo Alto comments 5.1 and 5.6e(I).

Response to Comment 8.2

The Fluvial Geomorphology Plan would result in the loss of 140 parking spaces at Foothill College, more than double the loss incurred by the proposed plan. This is considered by the District to be a greater parking space loss than can be replaced economically, as shown in the Engineer's Report and EIR. In addition, this alternative would require the construction of a new bridge crossing and provide lower quality habitat for onsite mitigation than the proposed plan. It must also be noted that the Foothill College Board of Directors do not support the Fluvial Geomorphology Plan After a presentation of many different alternative plans, the College Board endorsed the District's proposed plan.

Response to Comment 8.3

The comment is acknowledged and hereby included in the environmental record. However, we request receipt of the Regional Water Quality Control Board's comments at the earliest opportunity possible to facilitate the incorporation of these comments into the plan formulation and refinement. No further response is required.

420 Cypress Drive Los Altos, California 94022

26 November 1996

Mr. Scott Wilson
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Dear Mr Wilson:

I have inspected the Engineer's Report and draft Environmental Impact Report for the Adobe Creek Watershed Planning Study and have the following comments.

As you know, I own property on the north side of Adobe Creek's Reach 5 As the creek passes through my lot, its bank is retained with a vertical wall of rebar reinforced concrete blocks. In addition, many redwood trees line the bank close to the block wall. From my reading of the proposed plan for Reach 5, I conclude that the SCVWD intends to remove my block wall, replace it with gabions, and maintain the present severe kink in the channel's path

One purpose of this letter is to inform you that I emphatically oppose removal of the block wall on my property. Disturbing this wall in any way will irreparably damage the root structure of the magnificent redwoods lining this bank. I intend to use every legal means at my command to maintain this wall throughout the construction. The SCVWD will NOT subject my redwoods to the damage it inflicted on redwoods lining the bank of the Levis property, where the bank was cut back to expose the roots so that they could be sprayed with gunnite. This flagrant disregard for the health of the trees demonstrated SCVWD's inability and/or desire to protect the existing trees. 9.1

If you must use gabions along my property, I insist that the gabion wall be added to the south side of the existing block wall. Leaving the wall intact will minimize damage to the redwoods as well as lower your construction cost. Although this approach is preferable to your present design, I must again repeat my opposition to the use of gabions for this purpose From my observation of gabion walls such as constructed on Adobe Creek at the Jesuit Retreat in Los Altos, gabions are an ugly solution to bank retention that introduces unnecessary weeds and consequent air and visual pollution. Since the introduction of these gabions, we have observed a noticeable increase in the vegetation carried downstream during high runoff periods. I attribute most of the excess vegetation to projects like the gabion walls. 9.2

Finally, I request that you reconsider the proposed alignment of the creek on my property The present proposal maintains a severe kink in the low flow channel that makes no sense at all. It is obvious from even a casual inspection of the plan and profile on sheet 13 of the Study that the path of the creek can easily be straightened by removing this kink. Forcing water to make sharp bends is poor engineering design and will lead to unnecessary stress and erosion of the sidewalls. Consequently I request that you straighten the channel by backfilling to my block wall before adding the gabion wall to define a nominally straight line connecting the walls at the corners of the Levis and Wittner properties Such a channel path will enable smooth flow and reduce maintenance of the low flow channel The current project is your final opportunity to straighten the channel and improve flow in this section of the creek Don't miss it. 9.3

I look forward to your incorporating the above improvements into your plan for Reach 5 of Adobe Creek.

Sincerely,

Thomas L Paoli

Thomas L Paoli, Ph D.

INDIVIDUALS

RESPONSES TO COMMENTS FROM THOMAS L. PAOLI (Letter 1), DATED NOVEMBER 26, 1996

Response to Comment 9.1

The proposed project will not remove the block wall referred to in the comment. The planned improvements within this Reach will be beyond the existing concrete block wall on your property.

Response to Comment 9.2

Gabions have been proposed on the left bank (Los Altos side) of Reach 5 to preserve and protect the existing trees The available right-of-way does not allow the District to slope back the bank and use another form of bank protection. In addition, the residents adjacent to the construction in Reach 5 were concerned about the visual unattractiveness of too wide of a channel. For these reasons gabions were selected for the left bank.

Response to Comment 9.3

The design parameters of the low-flow channel portion of the proposed project in your reach of Adobe Creek were that it would follow the existing channel alignment. The channel alignment has been modified to reduce the "kink" or creek bend by your property. This will reduce the right of way needed for the proposed project on your property.

ed mcquiston

644 leaf court, los altos, ca 94022

December 7, 1996

Mr. Scott Wilson
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Subject: Adobe Creek Planning Study

The Erosion Control Sites 9-12 apparently includes our property along the Adobe Creek I am writing to implore you to take action to stabilize the eroding bluff that is within our property line.

We have been residents here for over 25 years and have seen plans to take action on the problem since 1974, without anything being done. Included in your 10-year plan then was a simple action to provide sand bags to shore up the bluff to stop undercutting, and to save a giant oak tree. Nothing was done. The tree died, rotted and fell across the creek, leaving a sheer drop-off 10 feet vertical for more undercutting and erosion, and an expensive clearing of the creek. Now the bluff is unstable and threatens to become a slide, blocking the creek and causing flooding upstream.

10.1

I have an ongoing relationship with Dennis Ely on your staff. We have deeded the right of-way to SCVWD with the understanding that you needed this to take action That simply resulted in a few engineers and planners to view the site, but no action although they seemed to agree that it is needed. More slippage is occurring and becoming a hazard to our home foundation We have been told over the years that there is not enough money and it is now in the hands of the Bureau of Fish and Game, the environmental group, the Army Corps of Engineers, and several bureaucratic levels. We seem to be helpless to do anything. We cannot make any changes on the bluff without the same approvals you seek.

It seems in your best interests, and ours, to resolve the problem and avoid costly crisis solutions later. **"An ounce of prevention is worth a pound of cure."**

Thank You

Edward D. McQuiston

cc: Dennis Ely

RESPONSES TO COMMENTS FROM EDWARD McQUISTON, DATED DECEMBER 7, 1996

Response to Comment 10.1

This erosion site on the subject property is included in the list of sites for repair by the District Maintenance Department. It will be scheduled and repaired under their regular maintenance program

JAY & MURIEL GOULD

December 7, 1996

Randall R. Talley, P.E. ✓
Supervising Engineer
and
Scott Wilson
Project Engineer
Adobe Creek Planning Study
Santa Clara Water District
5750 Almaden Expressway
San Jose CA 95118-3686

We are responding to the notice you recently sent us regarding the proposed Adobe Creek flood control plan, and specifically the plan for Reach1.

Our house is at 663 Glenbrook Drive, adjacent to the Terman Park We built our home in 1958 and we have observed the water flow and water level in the creek each year since then. We have more than a passing interest in the possibility of flood damage, and since our property constitutes a major investment for us, as well as many residentsin the area, we appreciate having a government agency which works responsibly to minimize potential problems from Adobe Creek's overflows. However we were truly shocked when we looked at your proposed plan for this section.

Regarding the so-called 100 year flood and the potential damage that could result from such an event, our personal observations through the past 38 years might be of some use to you. The bottom of the Adobe Creek is at least 25 feet below the level of our backyard, and in all the years we have lived here we have never seen the Creek rise more than 4 or 5 feet above the creek bed, even during the worst storms. While it is conceivable that it could get worse than what we have seen in 38 years, the question is "How much worse? Four times worse to fill an additional height and reach 25 feet of water?" — 11.1

If so, then the bottle neck would occur at El Camino where even the proposed new culvert would not be able to handle this amount of water. Simple observation shows that the cross section of the creek at our property is much greater than the cross section of the culvert at El Camino. The point here is that it does not seem plausible to require an enormous amount of right of way up stream presumably to allow increased flow, when the new construction down stream is not capable of carrying such increased flow. — 11.2

663 GLENBROOK DRIVE ◆ PALO ALTO CA ◇ 94306
PHONE 1 415 [illegible]

RESPONSE TO COMMENTS FROM JAY& MURIEL GOULD (Letter 1), DATED DECEMBER 7, 1996

Response to Comment 11.1

Based upon the profiles in the Engineer's Report (Sheet 4) of 100-year flood flow in this reach would be 12 feet deep at the downstream end of the subject property and 13 feet deep at the upstream end (well below the existing top of bank).

Response to Comment 11.2

The proposed easement contained in this project reach is primarily for maintenance, not for flood construction or to contain increased flow. The proposed culvert replacement at El Camino Real will provide a 100-year sized culvert and relieve potential flooding impacts at El Camino Real.

While reading the plan at the local library, many questions came to mind because the information is very voluminous and not too clearly summarized. One has to practically read the entire two and a half inch manual to begin to make an intelligent assessment. Also, because many of the drawings are defined as "typical", we could not establish just what portion is "typical" along the creek. This caused us to be confused as to the exact plan for the creek in the area of our property. We then called your office to determine what would happen to the 30 plus trees in our immediate area. We were told that they would not be touched, but since some of the plans indicate that either initially or sometimes in the future the creek would be widened, it is difficult for us to understand how it can be done without cutting trees that grow right above the creek bed. 11.3

Another concern we have after looking at the proposal arises from the fact that the *easement* requested requires taking nearly one third of our property. The use of such wide a portion of our property, in conjunction with the potential removal of considerable amount of land to accommodate future maintenance, would absolutely destroy the beauty and serenity of our professionally designed garden for which we have spent numerous years and a great deal of money to achieve. Our beautiful gazebo and well are located on your proposed easement and would also be exposed to destruction. 11.4

In conclusion, it is unfortunate that such a short notice has been given for us to react to these matters. We have previous commitments for your scheduled meeting and therefore *would prefer an answer from you* in writing before we confer with our attorney to explore the various avenues available to us. It is quite possible that you might allay some, if not all, of our fears and allow us to have a peaceful Holiday Season. 11.5

We are looking forward to your prompt answer.

Sincerely,

Jay & Muriel Gould

RESPONSE TO COMMENTS FROM JAY& MURIEL GOULD (Letter 1), DATED DECEMBER 7, 1996

Response to Comment 11.3

The typical cross section for the subject reach of the creek (Reach 1) is shown on Sheet 32 of the fold-out sheets at the end of the Engineer's Report. For maintenance repairs, the "typical" section shown in the *Engineer's Report* would be the one most appropriate for the erosion that has occurred and the site conditions (ie., trees, height of bank, etc.). This is a future condition, and therefore, no typical erosion repair cross section can be associated with any property that is not currently erosion damaged.

Response to Comment 11.4

The proposed easement line was drawn to provide enough room for the District to perform necessary maintenance. However, the right of way line on your property was drawn erroneously and has been redrawn to the top of the existing creek bank and will be reflected in the revised Engineer's Report.

Response to Comment 11.5

CEQA requires a public comment period of at least 45 days on the Draft EIR. The District's comment period for the proposed Adobe Creek Project was 74 days. In addition, several community meetings have occurred on the project over the past few years. For these reasons, the District believes adequate time and notice have been provided for public comment.

This document should be considered a response in writing to your letter.

GREENACRES I

December 8, 1996

Randall R. Talley, P.E.
Supervising Engineer
and
Scott Wilson
Project Engineer
Adobe Creek Planning Study
Santa Clara Water District
5750 Almaden Expressway
San Jose CA 95118-3686

We have reviewed the Santa Clara Water District Engineer's report and Draft Environmental Impact Report (DEIR) for the proposed project on Adove Creek and we have the following comments to make with respect to **Reach 1** of the proposed project.

Proposed Initial Plan:

1✓ It is our understanding that except for the erosion control measures detailed on pages 7-7 and 7-8 of the DEIR **no other changes will be made to the existing Adobe Creek between Station 262 + 90 and Station 277** (the part of Reach 1 between the Crockford property and the Hetch Hetchy Pipeline). To further clarify the implication of this conclusion, this means that while debris at the bottom of the creek may be removed, all current vegetation on the banks of the creek will remain as is and **no trees will be cut down**. It is our understanding that similar treatment will be applied to Reach 2 with some differences, but still preserving the existing natural habitat 12.1

2✓ All existing structures in the proposed right of way for Reach 1 between Station 262 + 90 and Station 277 will not be removed, damaged or otherwise disturbed. As an example the gazebo and the well located on the Gould property will not be disturbed. 12.2

3✓ No permanent fences will be installed between Station 262 and Station 271 plus 50 feet, that is between the left border of the Crockford Property and the right border of the Gould property (left and right are defined by looking at the front of the property from Glenbrook Drive). All existing fences that are required to be removed during the work detailed on pages 7-7 through 7-8 will be replaced with like materials to the original state 12.3

We would like to have an official, written confirmation from your office that the above interpretation of your proposed plan is correct, or if some items are not stated correctly, please furnish us with the correct version 12.4

666 GLENBROOK DRIVE ◆ PALO ALTO CA ◆ 94306-4306 USA
PHONE 1 415-494-1224 ◆ FAX 1 415 494-8510 ◆ EMAIL ANGRANZOTTI@MSN.COM

RESPONSE TO COMMENTS FROM GREENACRES I, DATED DECEMBER 8, 1996, cont.

Response to Comment 12.1

The commentor is correct as to their understanding of the improvements to be conducted within this reach of the Creek. No further response is required.

Response to Comment 12.2

All existing structures located within the proposed right of way within this section of the creek bank will remain. No structures are planned for removal.

Response to Comment 12.3

The commentor is correct as to their understanding of the improvements to be conducted in this reach of the creek

Response to Comment 12.4

The commentor's interpretation of the work to be conducted within this reach of Adobe Creek is correct.

This document should be considered a written response to your letter

Maintenance Plan·

The maintenance plan as described in section 8 of the DEIR **poses a number of problems for the neighborhood** at large and in particular for those who live on Glenbrook Drive. According to this plan, when made "necessary" by future erosion, **considerable alteration to the natural state of the channel could be made with serious impact on the existing vegetation.** Each proposed maintenance procedure for the treatment of an eroded bank, with one or two possible exceptions, will most certainly **require removal of ancient native trees** which today provide a number of benefits to the environment, to the neighborhood quality of life, and to the value of the properties. 12 5

Since the proposed easements are on the average 75 to 80 plus feet wide throughout the area of concern, and considering the fact that each proposed erosion control measure would require the potential removal of the existing bank soil up to the edge of the right of way, implies that at some point in time, after the initial non invasive procedures *are applied*, considerable amount of property now enjoyed by each neighbor would be removed, structures would be destroyed, ancient trees would be cut down, etc. **This would cause a very serious impact to the environment, to property values, and to the aestethics of the natural creek environment**. As an example, at the Goulds (663 Glenbrook Drive) approximately 30 % of their existing property could be drastically altered and eliminated, severely impacting their property's value. In this area alone there are 33 native trees, *some* very, very old, large, and healthy (see attached drawing).

Upon analyzing the maintenance plan (section 8 of the DEIR), we have observed that in all of the drawings where a potential removal of several cubic feet of soil is indicated in order to apply the maintenance procedure, no presence of trees is indicated This omission makes the procedure appear reasonable. *In reality there are hundreds of trees in the area of* concern and these procedures would be disastrous. If these methods are applied as shown, all trees within the right of way where erosion would occur would be damaged or eliminated over time with no supervision and no recourse for the property owners who have signed their rights away. To illustrate this point more graphically, we have attached all of the drawings copied from the proposed plan showing the maintenance methods and we have altered one of the drawings to indicate the presence of *trees It is clear from* the modified drawing which shows the real situation of a property such as the Goulds for example, that the preponderance of the proposed methods is not acceptable We must be assured, in a legally binding way that these destructive methods will not be applied in zones where there are trees Only those methods that protect the existing trees and do not disturb the land and the structures which would be in the right of way should be applied As an example, the method shown in figure *8.12 with the gabion carried out up to* the top level of the existing soil would be acceptable. It is clear to us that these points will require further discussions with the Water District personnel responsible for the proposal. 12.6

RESPONSE TO COMMENTS FROM GREENACRES I, DATED DECEMBER 8, 1996, cont.

Response to Comment 12.5

The proposed right-of-way lines in this reach were drawn at the existing top of bank for the purpose of erosion repair, not for soil or vegetation removal. The proposed right-of-way lines shown in the *plates of the Engineer's* Report are believed to be reasonably accurate but are for planning purposes only and would be defined in greater detail, approved by the property owner, and surveyed prior to any maintenance easement dedication.

Please refer to the response to Jay and Muriel Gould comment 11 3

Please note that the maintenance plan is presented in the Engineer's Report, and not in the DEIR

The typical cross-sections that show trees are for situations with trees. The typical cross-sections that do not show trees are for situations without trees. Please accept the cross-sections, as presented

Response to Comment 12.6

It is not the intent of the District to remove any soil or trees that are not absolutely necessary to save either a bigger tree or structure in danger of falling into the creek. The District has done erosion repairs to stabilize large native trees at the top of a creek bank in the subject area Any work proposed by the District would be discussed with the property owner regarding options and schedule.

We would like to see specific non-invasive alternatives committed by the Santa Clara Water District before we agree to relinquish any rights. Some alternatives could in fact be some of the very approaches indicated in the DEIR. We would like to have such alternatives committed before we consult with attorneys on the matter of the proposed easements.

We find the proposed future maintenance plan very threatening to our properties and to the environment. We are appalled at the notion that the Cities of Palo Alto and Los Altos have not objected to the maintenance plan. We are going to contact the appropriate authorities in both of these cities to make them aware of the fact, that while the initial plan appears cogent, the maintenance plan betrays the principles underlying the initial plan and contradicts the fundamentals of the main plan.

We are ready to meet with you in the near future, and prior to the January 3 deadline for written comments, to discuss the maintenance plan. We want also to remark that it was unfortunate that a month's notice, during the busiest holiday season of the year, has been selected to alert the neighborhood.

Please contact either Mr. A. Granzotti (415-494-2224) or Mr. J. Gould (415-493-6909) to arrange a meeting at your earliest convenience

Sincerely,

Adobe Creek Reach 1 Neighbors

cc Palo Alto City Council
Los Altos City Council

RESPONSE TO COMMENTS FROM GREENACRES I, DATED DECEMBER 8, 1996, cont.

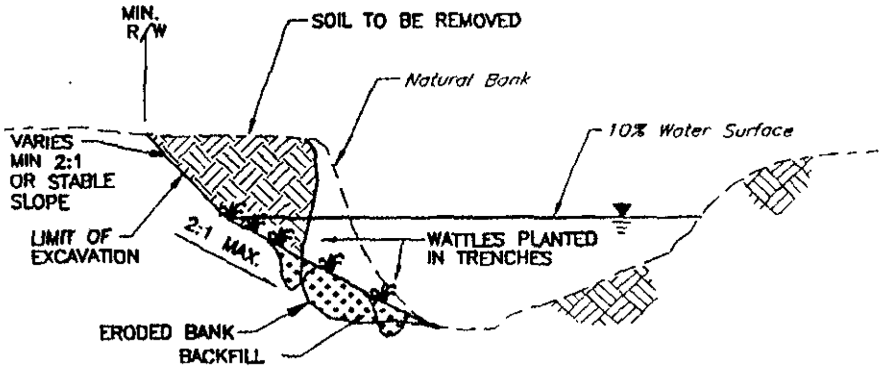


FIGURE 8.5
CONTOUR WATTLING

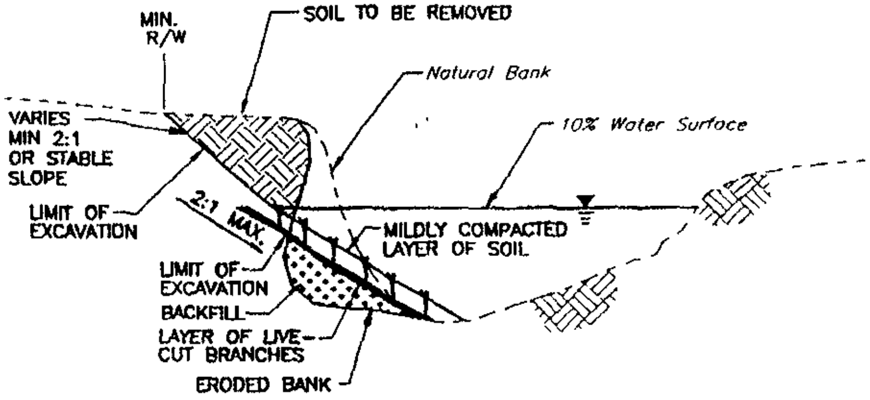


FIGURE 8.6
BRUSH LAYERING

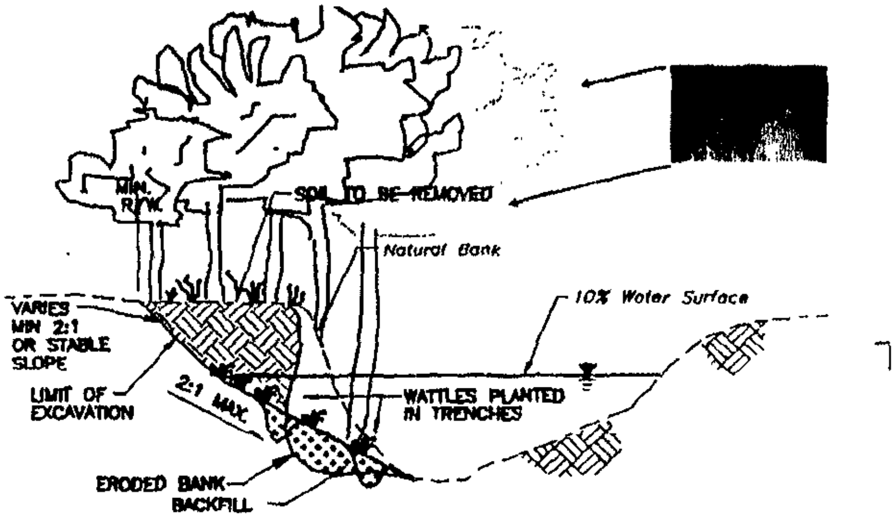


FIGURE 8.5 Modified to show existing trees
CONTOUR WATTLING

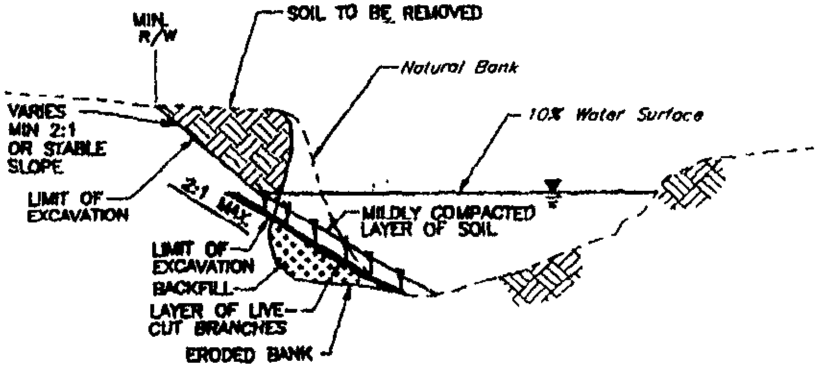


FIGURE 8.6
BRUSH LAYERING

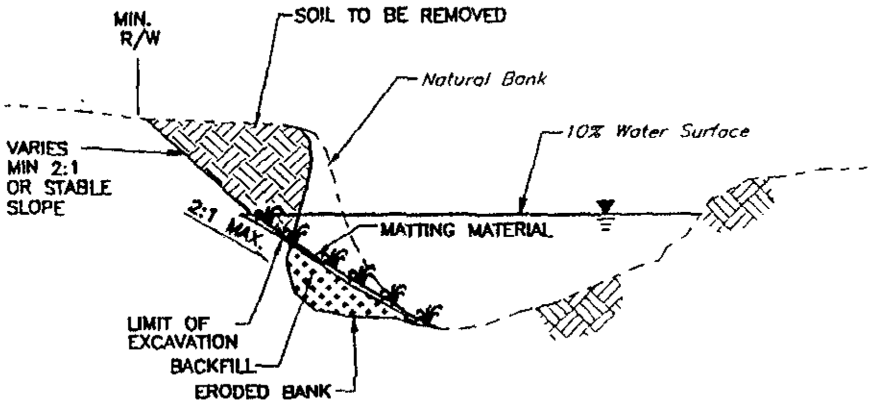


FIGURE 8.7
BANK SURFACE MATTING

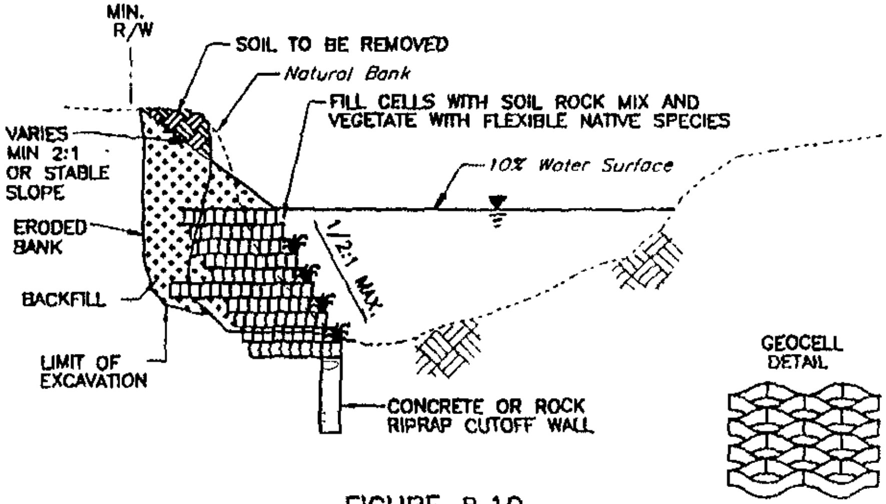

MIN.
R/W
SOIL TO BE REMOVED
Natural Bank
FILL CELLS WITH SOIL ROCK MIX AND VEGETATE WITH FLEXIBLE NATIVE SPECIES
VARIES MIN 2:1 OR STABLE SLOPE
10% Water Surface
ERODED BANK
1/2:1 MAX.
BACKFILL
LIMIT OF EXCAVATION
CONCRETE OR ROCK RIPRAP CUTOFF WALL
GEOCELL DETAIL

FIGURE 8.10
SOIL CELLULAR CONFINEMENT SYSTEM (GEOCELL)

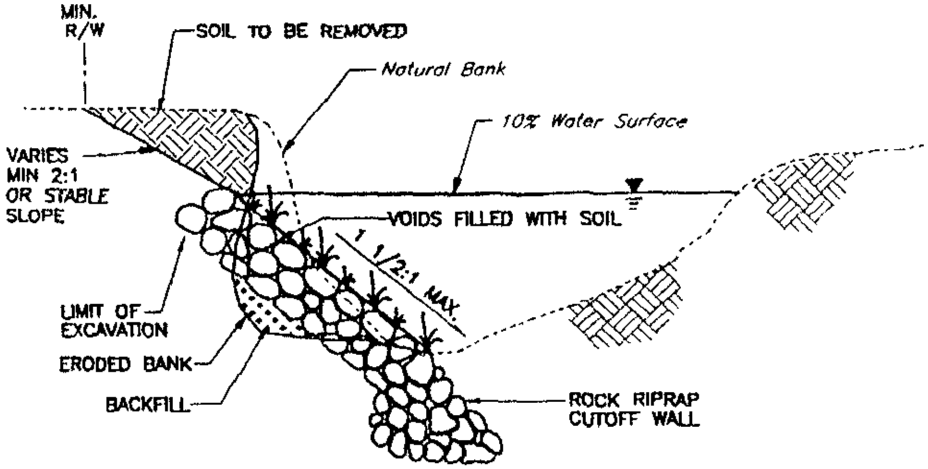


FIGURE 8.11
ROCK RIPRAP

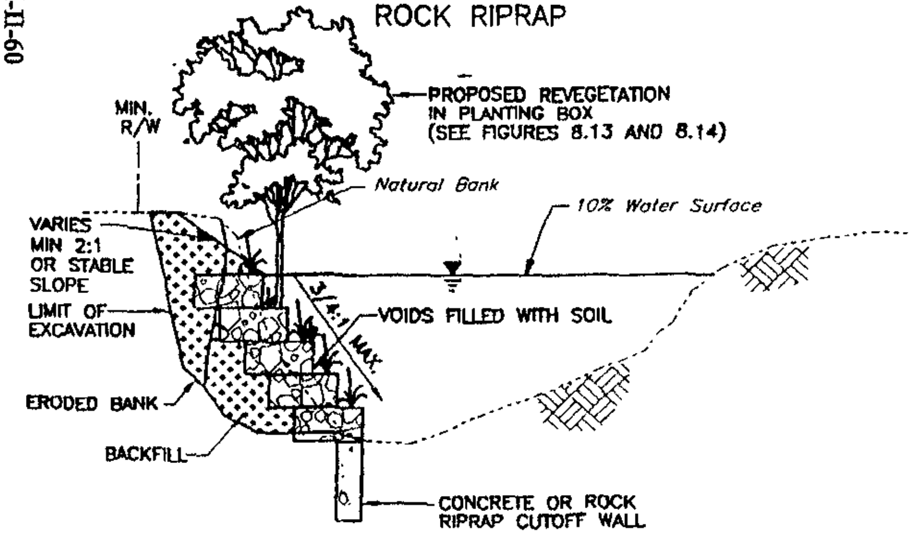


FIGURE 8.12
GABIONS

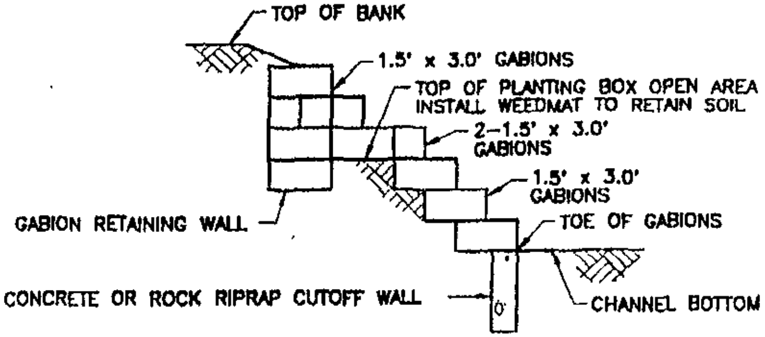


FIGURE 8.13
GABION PLANTING BOX SECTION
NTS

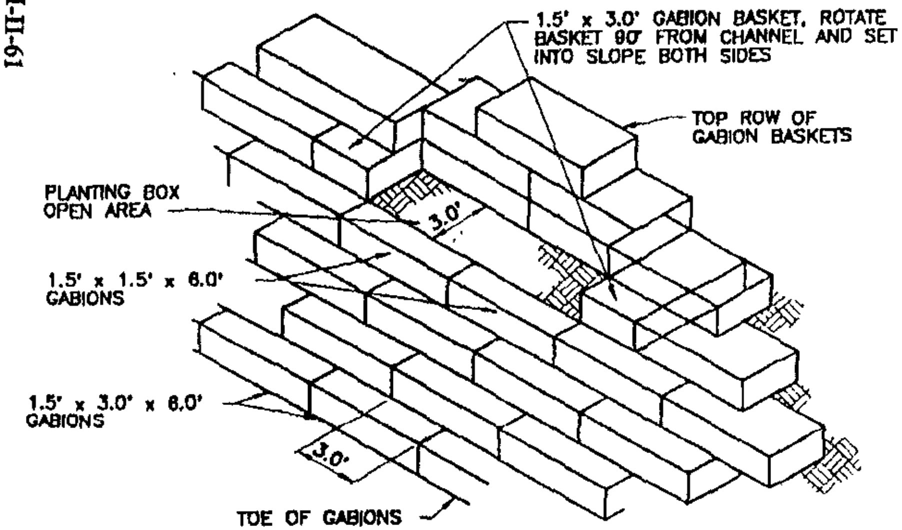

1.5' x 3.0' GABION BASKET, ROTATE BASKET 90° FROM CHANNEL AND SET INTO SLOPE BOTH SIDES
TOP ROW OF GABION BASKETS
PLANTING BOX OPEN AREA
3.0'
1.5' x 1.5' x 6.0' GABIONS
1.5' x 3.0' x 6.0' GABIONS
3.0'
TOE OF GABIONS

FIGURE 8.14
GABION PLANTING BOX DETAIL
NTS

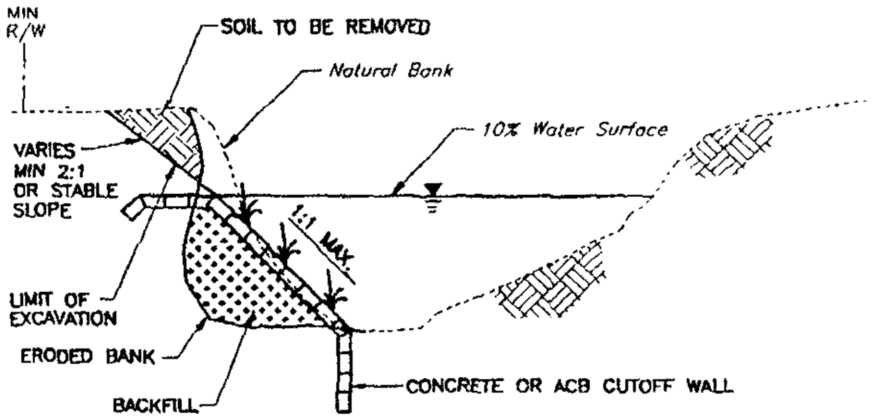


FIGURE 8.15
ARTICULATED CONCRETE BLOCK (ACB)

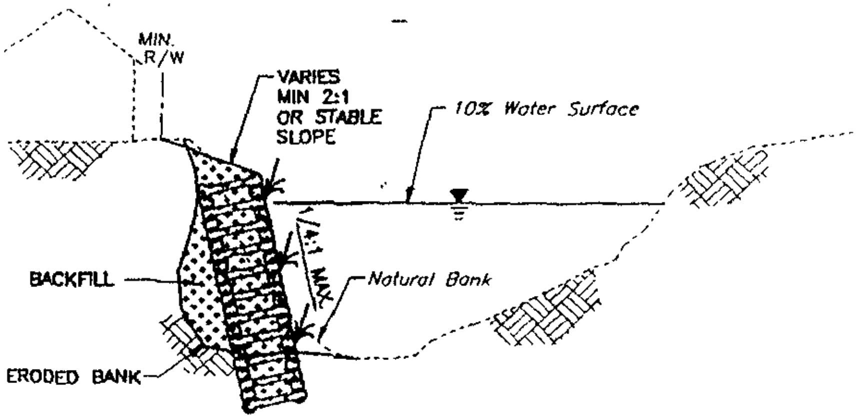


FIGURE 8.16
CRIB WALLS

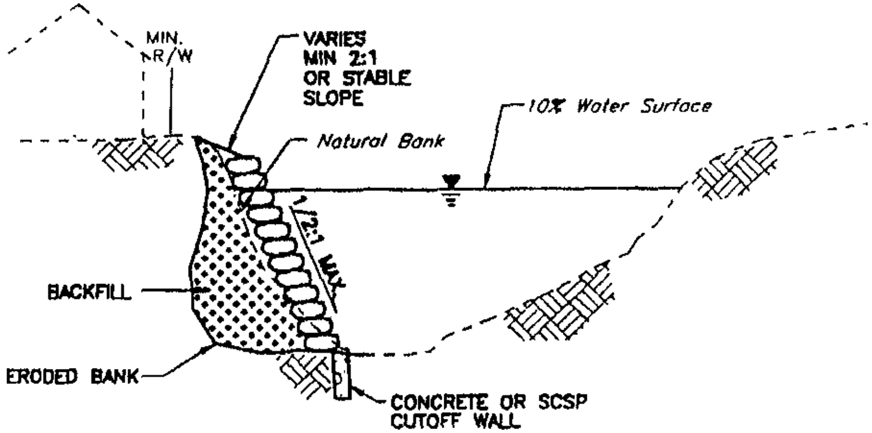


FIGURE 8.17
SACKED CONCRETE

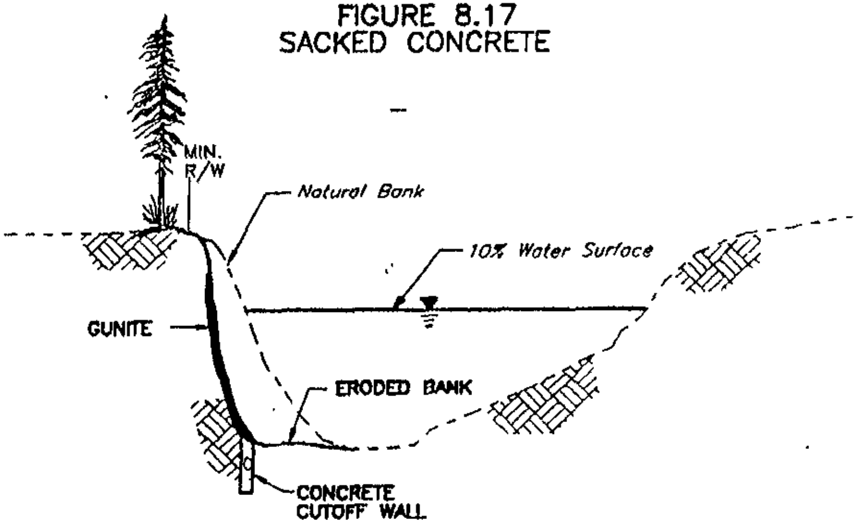


FIGURE 8.18
GUNITE

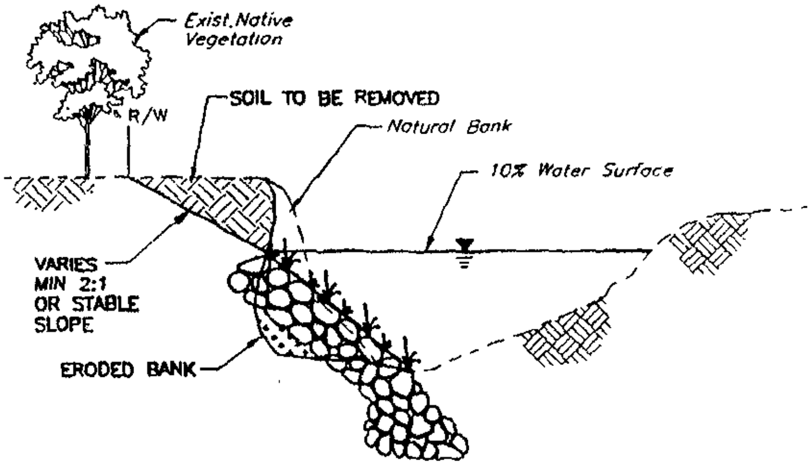


FIGURE 8.19
SLOPE CUTBACK
(ROCK RIPRAP AS EXAMPLE OF REMEDIAL SLOPE PROTECTION)

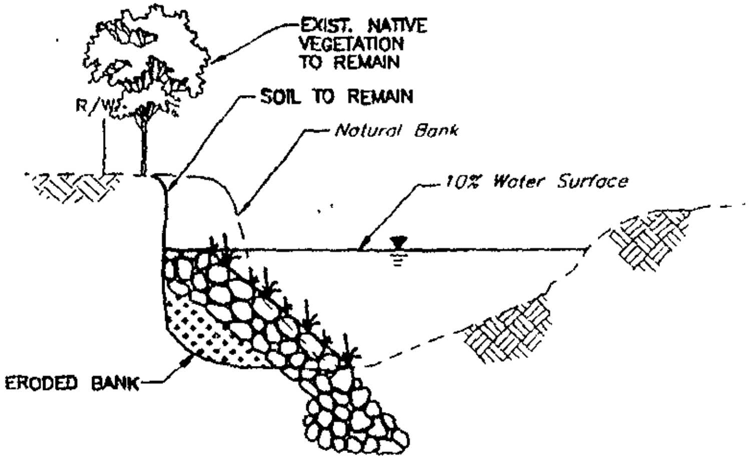


FIGURE 8.20
NO SLOPE CUTBACK
(ROCK RIPRAP AS EXAMPLE OF REMEDIAL SLOPE PROTECTION)

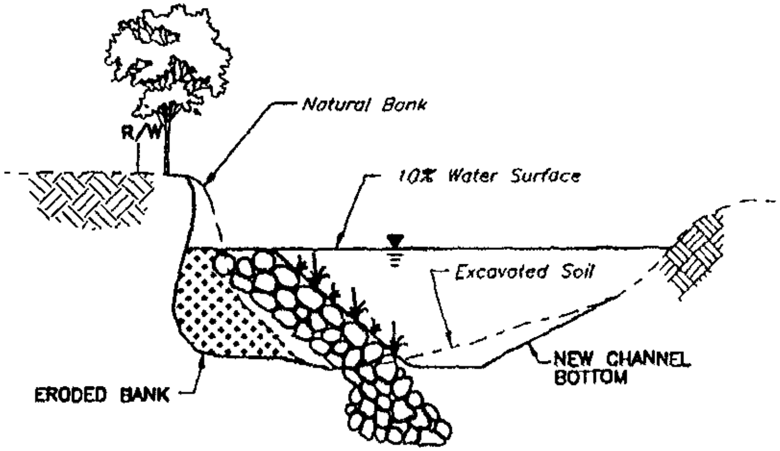
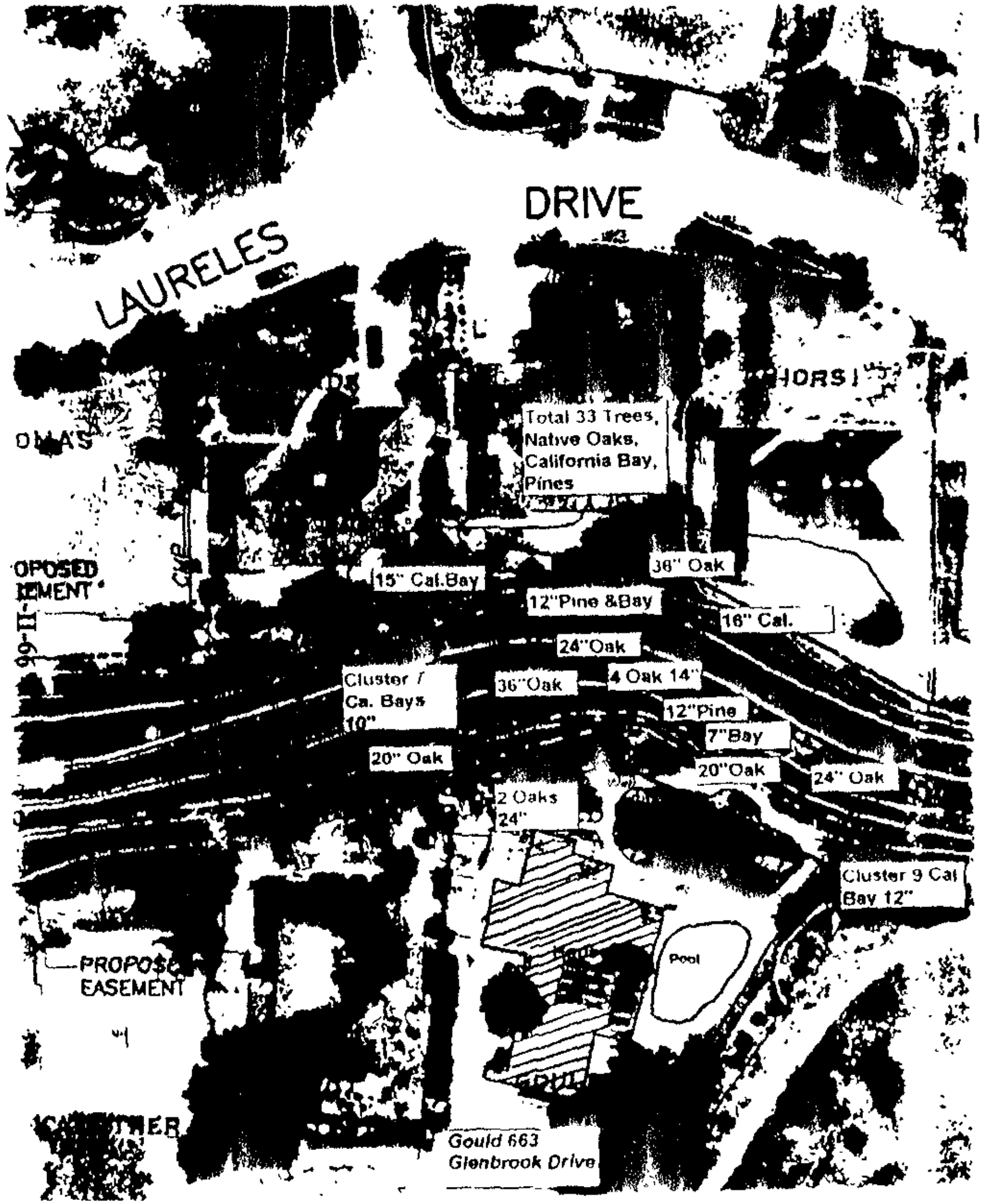


FIGURE 8.21
CHANNEL BOTTOM REALIGNMENT
(ROCK RIPRAP AS EXAMPLE OF REMEDIAL SLOPE PROTECTION)



ATTACHMENT TO GREENACRES I LETTER

CARRASCO & ASSOCIATES

December 9, 1996

Palo Alto City Council
250 Hamilton Avenue
Palo Alto, CA 94301

re: Draft Environmental Impact Report for Adobe Creek Watershed Project

Dear Mayor Wheeler and members of the Council.

On behalf of our client, B. B. Patel, owner of the Palo Alto Cabaña hotel, we would like to express strong support of the Staff Report and Planning Commission recommendations on the above-referenced Draft EIR. The Palo Alto Cabaña hotel property abuts the Adobe Creek watershed for approximately 1,180 feet; thus, specific areas also concern our client as follows:

1. Public improvements within the SCVWD's right-of-way at Adobe Creek are the responsibility of the SCVWD. Mr. Patel will not pay for any improvements within that right-of-way. 13.1

2. Decibel levels for construction noise as shown in the DEIR appear to be quite high, even though noted as being within Palo Alto's acceptable levels. As architects, it is our experience that this type of construction activity generates high noise levels. It is Mr Patel's concern that these decibel levels will be very disturbing to hotel guests and will have a significant negative impact on hotel operations and occupancy. 13.2

3. Page 7-11 of the DEIR discusses staging for construction as potentially being on the "vacant" Hyatt site. Obviously, this document was prepared prior to Mr. Patel's purchase and re-opening of the Cabaña. Certainly the property is now not available for any use by SCVWD for any construction activities or access. We would expect to see the DEIR modified to delete this statement and to fully address location and impacts of all staging areas which would actually be used for the project. 13.3

4. It is not clear in the DEIR what is actually planned for the El Camino overcrossing of Adobe Creek. Is the bridge and/or its guardrail being replaced? If so, what design is being considered? It is also not clear what is meant by "working with the City". We would like to see the existing bridge rail design maintained, as it has a "modern" appearance which is compatible with the architecture of the Palo Alto Cabaña hotel. 13.4

   If the guardrail is being extended due to culvert construction, we would like to see it remain the same as existing, or if not possible due to current codes, it should be very similar in design We would expect to see the DEIR modified to fully address the proposed design for the bridge and guardrail

---

RESPONSES TO COMMENTS FROM CARRASCO & ASSOCIATES ON BEHALF OF THE CABANA HOTEL, DATED DECEMBER 9, 1996

Response to Comment 13.1

The commentor is correct. The District already has funding in place for the construction of the proposed improvements within the right-of-way, and would not be seeking additional funds from adjacent property owners

Response to Comment 13.2

As stated on pages 129 and 130 of the DEIR, mitigation measures such as limiting construction hours and days, and requiring the state of the art noise shielding and muffling devices on all construction equipment will reduce noise impacts to less than significant level. In addition, the short-term nature of the noise impacts and the implementation of the proposed mitigation measures would reduce the potential construction noise impacts to a less than significant level.

Response to Comment 13.3

The Engineer's Report has been updated to reflect this change in use and nonavailability of the site

Response to Comment 13.4

The District is proposing to replace the culvert under El Camino Real and the existing concrete upstream transition. The aesthetic design of the culvert (ie. a decorative guardrail) is being coordinated with the City of Palo Alto and the City of Los Altos so that it will conform to their "Gateway" plans. The design will also have to conform to Caltrans standards. A sketch of the Palo Alto plan will be included the final Engineer's Report.

2

Mr. Patel and Carrasco & Associates share the Planning Commission's and staff's concerns regarding the aesthetics of the gabion solution to creek bank stabilization Loss of riparian habitat and the harsh appearance of a concrete structure will negatively impact the aesthetic of the existing creek An effort should be made by SCVWD to maintain the natural appearance of the creek environs while solving the engineering problems. -13.5

Very truly yours,

Tony Carrasco

Tony Carrasco AIA

cc: Terry Neudorf, SCVWD
Scott Wilson, SCVWD
Virginia Warheit
B. B. Patel

RESPONSES TO COMMENTS FROM CARRASCO & ASSOCIATES ON BEHALF OF THE CABANA HOTEL, DATED DECEMBER 9, 1996, cont.

Response to Comment 13.5

This comment is included in the environmental record. Please refer to the responses to the California Department of Fish and Game comments 1.1, 2 1, and 2 2, and responses to City of Palo Alto comments 5 2 and 5.7a, regarding the proposed bank stabilization at El Camino Real

Ruth H. Koehler
64 Stuart Court
Los Altos, CA 94022
415/948-1816

December 12, 1996

Santa Clara Valley Water District
Attention. Scott Wilson, P.E.
5750 Almaden Expressway
San Jose, CA 95118-3686

Dear Scott:

RE: Comments on Adobe Creek Watershed Planning Study's Engineer's Report and Draft Environmental Impact Report

As a Los Altos resident who does not live near Adobe Creek and as a member of the City of Los Altos Environmental Committee, I have reviewed both the Engineer's Report and the Draft Environmental Report. Here are my concerns for your consideration.

1. Under existing conditions and prior to any proposed construction to reduce flooding along Adobe Creek, the most flood-prone area is that of Blue Oak Lane. In Reaches #3-5 according the Sheets #10A, 11, and 12 as well as Sheets #34-40, the 1% flood would impact 16 homes along Blue Oak and also 4 homes on the other side of the creek at Raquel Court. At Yerba Buena Avenue, the creek is narrow with homes built close to the creekbanks. The small capacity of this culvert, though, does not seem to be a limiting factor, as according to the 1% flood projections, Adobe appears to overflow its banks prior to the Yerba Buena culvert and just downstream of the culvert under the Foothill Expressway, flood Blue Oak, and then continue to the other side of the creek at Raquel Court. In other words, the creek by-passes the confining Yerba Buena culvert. Blue Oak is in unincorporated area and is served by septic tanks, while Raquel court is within Los Altos and served by the sewer system. 14.1

- What are the chances of generating a public health risk should Adobe Creek flood in this area served by septic tanks? 14.2
- Would the flood waters be tainted by discharges from the septic tanks? 14.3
- Would this endanger Los Altos residents living at Raquel Court and others downstream? 14.4
- Might Blue Oak Lane residents be liable for any resulting damages?

2. The SCVWD's flood damage reduction objective to "provide flood protection by management of the natural floodplain or of a modified floodplain, using the more structural types of channel modification only where other measures are impractical" (Plan 1-3) is entirely consistent with the Los Altos General Plan. This states "Creeks and creekside areas should be retained in their natural state while ensuring public safety and preserving a valuable natural resource" (Los Altos General Plan, Chapter 7, Goal 1, Policy 3). As to flood hazards, the General Plan continues that "the City shall continue to discourage concrete lining of creek beds and shall encourage the SCVWD to use environmentally sensitive solutions to control local 14.5

RESPONSE TO COMMENTS FROM RUTH H. KOEHLER, DATED DECEMBER 12, 1996

Response to Comment 14.1

When septic systems are inundated by floodwaters, sewage leaks into the floodwaters raising the levels of fecal coliform and other hazardous substances in the floodwaters. This raises the public health risk if skin contact is made with the water.

Response to Comment 14.2

Please refer to the previous response to Comment 14.1.

Response to Comment 14.3

Skin contact with floodwaters should be avoided during any high flow event.

Response to Comment 14.4

The DEIR is not responsible for determining legal obligations.

Response to Comment 14.5

In the Engineer's Report, the pre-project damages are discussed on pages 3-24 and 3-25 and detailed in Table 3.6 The post-project floodplains are shown on the plates at the back of the report. The project would result in a $ 1.4 million reduction in flood damages.

erosion problems" (Chapter 9, Goal 3, Policy 8). In addition, according to a Los Altos Environmental Committee's spring 1994 survey of residents whose property abuts Adobe Creek, 75% of those responding to the survey felt that the creek is an asset to their property with only 4% believing that the creek is a liability.

I conclude that all of the parties,--that is, the residents, the City of Los Altos, and the SCVWD, desire to retain the creek in as natural state as is possible consistent with public safety My review of the plan recommendations for new/replacement culverts, new/upgraded maintenance ramps, repair of erosion sites, and a new maintenance program are in agreement with residents desires as well as government policies.

- Since the goal of the project is to provide 1 percent flood protection, where feasible, while minimizing construction and maintenance costs and overall impacts to the community and the natural environment, how effective would the proposed modifications be in reducing damage from the 1% flood?
- Is it possible to redraw a map estimating the resulting 1% flood lines after construction is complete? 14.6
- According to the notice of the December 12, 1996 hearing, some properties would be removed from the floodplain. Can the SCVWD identify which properties now prior to construction? 14.7

In the Engineer's Report, plans for replacement of the Yerba Buena culvert are deferred. "The District would participate as a cost-shared partner if the crossing were proposed to be replaced by another party, such as a City for structural or traffic reasons (Plan, page 1-7)" I observe that the bridge itself appears to be adequate and in good condition to serve traffic for the homes on Blue Oak. I can foresee no reason to anticipate replacement of this bridge by the City or County within the foreseeable future. Further, the decision to consider it only on a cost sharing basis appears to be a violation of SCVWD policy re: Bridge Construction-Cost Sharing (Res. 76-39). Item #2 in the Agency Memorandum Explanation states "The District bears all costs of new additional bridges when required because of the District's proposing a new relocated waterway." (These guidelines pertain to the City of San Jose and the District, but were designed to serve as a model for sharing costs of construction of bridges in other cities and the County Note Plan, Appendix K: page 2 our of 14.) 14.8

I concur with the decision not to include replacement of the Yerba Buena culvert in the plan for modifications. The creek capacity at this bridge is 600 cfs, and the culvert is rated for 720 cfs. , This culvert is described as least capable of conveying the 1% design flow of 2900 cfs as compared to the other culverts along Adobe Creek. Replacement of the culvert is about 20 to 25 feet from an existing residence (EIR Appendix B, Geologic review, page 4). While a new culvert would be capable to handling the 1% design flow, it would not solve the flooding problem due to the outbreak of flows downstream of the Foothill Expressway, which bypass the Yerba Buena culvert. 14.9

- The final Engineer's Report should make clear that the proposal to replace of the Yerba Buena culvert is not due to a lack of "cost sharing agreement for modification of the bridge"

RESPONSE TO COMMENTS FROM RUTH H. KOEHLER, DATED DECEMBER 12, 1996, cont.

Response to Comment 14.6

Please refer to the previous response to Comment 14.5

Response to Comment 14.7

Please refer to the previous response to Comment 14 5.

Response to Comment 14.8

The inadequacy of the channel in this section of Adobe Creek is explained in Chapter 5 of the Engineer's Report, page 5-17 The proposal is not a violation of District policy because no modification of the waterway immediately upstream or downstream of the culvert is proposed

Response to Comment 14.9

The channel modification closest to the Blue Oak/Raquel area is the proposed culvert under Foothill Expressway This will lower the velocity of flow coming under Foothill Expressway and erosion damage downstream should be reduced. However, the proposed modifications would have no effect on the residences on Raquel Court.

by another party such as the City or the County, but because it would not significantly solve the flooding problem.

- What impact does the SCVWD anticipate on the Bue Oak/Raquel area as a result of the proposed modifications?

4 SCVWD should be commended for the proposal for a new Limited Right of Way Maintenance Easement for Erosion and Vegetation Control. This is in addition to the older Flood Control Right of Way Construction Easement, which would permit the construction of concrete channels. The Limited Maintenance Easement is appropriate in order to give the SCVWD the ability to maintain the creek channel after completion of the modifications. 14.10

Property owners should give serious consideration to executing this new easement. Those, who do not, will continue to be responsible and liable for the section of the creek adjacent to their properties. Some property owners may feel complacent and disinterested in this easement and proposed modifications, because they have never had a creek problem or have taken what may appear to be adequate steps to cope with flooding. However, in 1995 100 feet of wooden fencing downstream of West Edith Avenue fell into the creek and parts were found 2000 feet downstream. *Property owners may be liable for damages downstream* caused by their lack of maintenance. Damage can occur due to lack of adequate maintenance anywhere upstream of their property. Some residents may fear giving the SCVWD responsibility for maintenance because they would anticipate that the SCVWD would use heavy equipment to access the creek from their property. The proposed modifications will provide not only new access points but also upgraded ramps, so that the SCVWD will have adequate access *without intruding onto property* owned by residents.

According to the Los Altos Stream Preservation Ordinance, the City is responsible for enforcing residents' maintenance of the creek channel if property owners do not provide the SCVWD the right of way for maintenance. It is not good public policy to divide responsibility for creek maintenance between property owners, the City, and SCVWD. Since SCVWD is a special purpose agency responsible for flood control and property owners have been paying special taxes to SCVWD for flood management, it should be given sole responsibility for Adobe Creek maintenance.

- How will the advantages of granting the Limited Right of Way Easement for Maintenance be communicated to property owners abutting Adobe Creek?

5 *It appears that the* permanent impacts from the modifications, which are deemed significant or potentially significant, are amenable to mitigation: 14.11

A With the loss of 1.38 acres of habitat within the riparian corridor, additional acreage is to be provided as mitigation. 6 potential sites have been identified with a possible total of 2 6 acres for replacement. *Mitigation sites are listed in Table 19 EIR, page 87.*

- At what stage in the process, will these sites be specified?

RESPONSE TO COMMENTS FROM RUTH H. KOEHLER, DATED DECEMBER 12, 1996, cont.

Response to Comment 14.10

When letters are mailed to creekside residents the advantages of the program will be explained The program for voluntary easement acquisition is detailed in the Real Estate Appendix of the Engineer's Report

Response to Comment 14.11

Detailed mitigation plans will be included with the permit submittals to the United States Army Corps of Engineers (USACE), California Department of Fish and Game (CDFG), and Regional Water Quality Control Board (RWQCB).

- As to the largest site adjacent to the Foothill Expressway site, might the revegetated riparian corridor be in conflict with access to the creek via the maintenance ramp? 14.12

B. Four known archaeological or cultural resource sites exist adjacent, but not within the project area The EIR notes that two archaelogically sensitive sites between O'Keefe and Manresa may be impacted by maintenance activities. For mitigation, it is proposed that a qualified archaeologist should monitor construction. 14.13

- The EIR should clearly state the a qualified archaeologist should not only monitor construction, especially in the area of the O'Keefe culvert, but also such advice must be sought should artifacts be uncovered during future maintenance activities.
- If significant cultural resources are identified, is the District prepared to follow the recommendations concerning archaeological or cultural artifacts? 14.14

C. As a result of the Foothill College Channel modification, 67 parking spaces will need to be removed and relocated. Foothill College has 3450 parking spaces on campus to serve 14,500 students and a faculty and staff of 400. With high demand at Foothill for parking, there are alternatives to replacement of the parking spaces. 14.15

- Has any consideration been given to mitigation by other means, such as improved bus service, encouragement of carpools, use of a shuttle, and transit alternatives?

Additional temporary impacts can be anticipated during construction:

D Business and residents adjacent to the creek may experience noticeable impacts during the construction process. Table 24 EIR page 124 identifies specific properties potentially affected by the project. With the El Camino and Foothill Expressway portions estimated to start in 1998, modifications around West Edith Avenue, Burke, to Foothill College in the year 2000, and the remainder in 2001, the construction is projected to occur over four years. 14.16

- How do these estimates compare with the scope of the work done on Matadero Creek? As an observer, it seemed that this project took a really long time. As I rode my bicycle by the site, it seemed that on most days there appeared to no activity at the site.
- In order to minimize disruption of traffic on busy El Camino and the Foothill Expressway, what steps is SCVWD prepared to take to speed and complete construction in a timely manner?. With work planned for the "low flow season", construction needs to be completed between April - October. 14.17

E Temporary fencing is planned for installation to address privacy and security impacts on adjacent homes. This is to mitigate short term privacy impacts and pets escaping. After construction, permanent fencing will be installed "in-kind". 14.18

- Will residents be consulted as to type of fence? Is this at District expense?

F. Noise from construction along back property lines within a few feet of adjacent residences will exceed local limits. If needed to move water around a construction site, pumps could operate 24 hours a day. To avoid the severe noise and vibration of pile drivers needed to install foundations, drilled piers must be used when necessary. These short term noise and property damage impact are addressed in the EIR, page 126-127. 14.19

- How will SCVWD anticipate pile driver impacts, which would require use of drilled piers, prior to damage to property?
- Specifically how will the SCVWD attempt to speed the construction time to minimize the discomfort to residents? 14.20

RESPONSE TO COMMENTS FROM RUTH H. KOEHLER, DATED DECEMBER 12, 1996, cont.

Response to Comment 14.12

The maintenance ramp at the Foothill Expressway site is currently used infrequently by the District. Such continued intermittent use would not compromise the use of the site for riparian mitigation Human activity generated by the presence of the access ramp will be minimal and not significantly affect wildlife use of the riparian mitigation area. The mitigation plan revegetation design will accommodate this access route.

Response to Comment 14.13

The third Cultural Resource mitigation measure on page 118 of the DEIR has been modified to include maintenance activities. The revised text is presented on page 116 in Section III. **REVISIONS TO THE TEXT OF THE DRAFT EIR,** of this document

Response to Comment 14.14

Please refer to response to comment 14.13 of this letter.

Response to Comment 14.15

The proposed mitigation for Foothill College was developed at the request of the College Board of Directors If the College Board proposed a different type of mitigation for the lost parking spots, the District would be agreeable, if the measures are feasible and equivalent in cost to the originally proposed mitigation.

Response to Comment 14.16

Adobe Creek Improvement Project is a smaller project which is planned to take two construction seasons The Matadero Creek culvert construction took three construction seasons, and had complications which are not expected during this project.

Response to Comment 14.17

Please refer to the previous response to the City of Los Altos Comment 7.2.

Response to Comment 14.18

Any fences removed or damaged during construction will be replaced in-kind at District expense Some new fences will be built at locations where it would be hazardous not to have a fence Residents will be consulted as to the type of fence at those locations. There are some options as to the type of fence that will still provide protection against hazards.

Response to Comment 14.19

If a deep foundation is required and the construction is within 20-25 feet of property with structures, there is a potential for damage due to pile driving. In that case, pile driving will not be used

G The relocation of utility lines may result in short-term interruptions of utility service in surrounding area. 14.21

- How will the residents of the affected properties be notified prior to interruption as much as possible?

H. I learned from the previous survey by the Los Altos Environmental Committee that the reasons that property owners value the creek as a asset include its natural scenic beauty and privacy "It provides a tree-shaded barrier between our home and the neighbors", stated one person responding to the survey. During construction, the creek's present shady character will be disrupted. It is anticipated that 10 Coast Live Oak protected Heritage trees will require City of Los Altos/Town of Los Altos Hills permits. The Plan includes revegetation after construction. Monitoring of these plantings is included, but it will require 5-10 years for cover to regrow. 14.22

- What is the District's experience with revegetation? We note that gabions were installed when townhouses were built at El Retire at Manresa Way Today about 10 years later, I can still see the wire baskets of the gabions and there is only a minuscule cover of weeds. If the longevity of the vegetation replacements along Adobe Creek approach the results at El Retiro, this is clearly unacceptable.
- After revegetating one project, didn't the SCVWD conclude that the installation and use of a sprinkling system for 3 years was essential to proper regrowth? 14.23

6 In the fall 1993 hazardous materials assessment of fuel site leaks, industrial discharges, and soil sampling performed by the SCVWD on Adobe Creek, it was concluded that it was unlikely there would be hazardous waste impacts. One of the six soil samples did find a positive test for fecal coliform, which confirmed a septic system discharge on private Morningside Drive near Milverton. This problem was referred to the County Environmental Health Department. 14.24

- Has any follow-up information been obtained to assess the present status of this problem? The final EIR should included updated information.

7 This project will be financed from monies paid to the SCVWD from this area, including revenue sources such as the Northwest Zone's allocation of the 1% property tax, the Northwest Zone's benefit assessment, and debt financing as feasible. 14.25

- What is the current availability of funds to pay for construction?
- Is it possible that lack of money might deter implementation of this project? 14.26

In general, I support SCVWD's Adobe Creek Watershed Planning Study with its Engineer's Report and Draft EIR In no way, should my comments should be construed as objections to the project, but are raised in the spirit of disclosing environmental impacts prior to initiation of this long overdue project

Sincerely,

Ruth H. Koehler

Ruth H. Koehler

RESPONSE TO COMMENTS FROM RUTH H. KOEHLER, DATED DECEMBER 12, 1996, cont.

Response to Comment 14.21

The District will make every effort not to interrupt any utility service; however, if utility service has to be interrupted, notification is usually by letter. Some short-term interruptions of utilities should be expected as part of the normal construction process.

Response to Comment 14.22

The District has been doing revegetation for over 10 years and has revegetation specialists on the staff. The gabions at El Retiro (not installed by the District) were not formally revegetated Soil was placed on top of the gabions and seeded The District places planting pockets within the gabions that offer a passage for the plant roots to native soil under the gabions. The technology of revegetating gabions has come a long way in the last few years. The proposed methods for planting in gabions are illustrated on Sheet 45 of the Engineer's Report. Please refer to response to City of Palo Alto comment 5.2

Response to Comment 14.23

Plant species that require irrigation during establishment would be irrigated. One of the goals of revegetation is to establish plant species that are self-sustaining (not requiring irrigation) after establishment

Response to Comment 14.24

This problem was handed over to Santa Clara County Environmental Health Department (SCCEHD) after it was discovered. A field investigation was conducted on the matter; however, SCCEHD does not have record of a permit being issued for its repair.

Response to Comment 14.25

The projected property taxes and benefit assessment income is currently estimated to be sufficient to pay for the proposed project

Response to Comment 14.26

Please refer to the above response to comment 14 25.

December 14, 1996

Terry A. Neudorf, Environmental Planner
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, Ca 95118-3686

Reference: Adobe Creek Watershed Planning Study, Project No. 1010

Dear Mr. Neudorf:

My property is at 587 Van Buren St.,Los Altos, Ca. directly across from Alta Mesa Cemetery at STA. 308. After review of the reference plan I wish to request two additional actions to help preserve my property. 15.1

First, at STA.308. My house is about 15 feet above the creek but only one step away from it. The riprap protection on the bank is breaking up and if not repaired soon could have serious consequences for the integrity of my home.

Second, at STA. 311. There is a small portion of land on the Alta Mesa Cemetery side jutting out that pushes water onto my property causing erosion and seriously endangering an oak tree.

If you could examine these two areas and include repair of them in your plan I would be very pleased.

I may be reached at work at 415/919-1551 or at home 415/948-2569 if you wish to discuss.

Thank you for considering these issues.

Sincerely,
Tom Marazzi
Thomas G. Marazzi

RESPONSES TO COMMENTS FROM THOMAS G. MARAZZI, DATED DECEMBER 14, 1997

Response to Comment 15.1

The comment letter does not address any of the issues raised in the DEIR, however, it does request maintenance work. A copy of this letter has been forwarded to the Santa Clara Valley Water District's Maintenance Engineering Unit.

Dinah's

Executive Offices

December 16, 1996

Members of City Council
Palo Alto, California

Re: Construction of a new culvert and bridge on Adobe Creek and
El Camino Real as proposed by the Santa Clara Water District.

Dear Council Members:

In your deliberations on the Santa Clara Valley Water District's above proposal, I ask that you seriously consider the deleterious effect this construction will have on Dinah's Garden Hotel and its two on-site restaurants (one opening in 1997).

It has been reported that the Water District has not addressed the impact this construction will have on the local businesses. Considering the havoc created by the construction of the Matadero bridge, I feel it is imperative that the Water District take into account the damage this project will cause 16.1

If the project is inevitable. I ask not only that a strict schedule be adhered to, but also that every aspect of financial consequence be considered. If this project goes over the projected completion time, there should be a financial penalty, the proceeds of which would go to the affected property owners. During the Matadero construction, restaurants and area merchants suffered tremendously while the project's completion was delayed for almost a year! This Adobe Creek venture appears to be once again "engineer driven" without consideration of the area's businesses. 16.2

Please address these concerns in your communications with the Santa Clara Valley Water District.

Sincerely,
Ray Handley
Raymond G. Handley
President

cc: ✓Mr Randall R. Talley, P E.
Santa Clara Valley Water District

Dinah's Hotel Corporation
4261 El Camino Real
Palo Alto, California 94306

415 • 493 • 2844
Fax 415 • 856 • 4713
800 • 227 • 8220

RESPONSE TO COMMENTS FROM DINAH'S HOTEL CORPORATION (RAYMOND G. HANDLEY), DATED DECEMBER 16, 1996

Response to Comment 16.1

As stated on pages 123-130 of the DEIR, the potential construction impacts associated with the proposed project, which include temporary traffic, noise, air quality, and property damage impacts, are mitigated to a less than significant level by the identified mitigation measures In addition, please refer to the response to the City of Palo Alto comment 5.10b

Response to Comment 16.2

The District can use incentive contracts and always extracts penalties from contractors for going beyond negotiated construction completion dates. Other aspects of this proposed construction have been previously discussed in City of Los Altos comment 7 2

Joseph W. Goodman
570 University Terrace
Los Altos, CA 94022
Fax and Phone (415) 941-9089

17 December, 1996

Randall R. Talley, P E.
Supervising Engineer
Water Resources Mangement
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Dear Mr. Talley:

I write to ask a very specific question regarding the planned improvements to Adobe Creek mentioned in your letter of November 13. I was unable to find a specific answer to this question in the materials available in the Los Altos Library. Specifically, what will be the effect of the proposed improvements on the 1% flood level at my property at the above address? More specifically, is the 1% flood level increased by these improvements? If the answer is "yes", then my neighbors and I would have serious concerns about what is planned. If the answer is "no", then we would have no objections. Thank you for your assistance. 17.1

Sincerely yours,

RESPONSES TO COMMENTS FROM JOSEPH W. GOODMAN, DATED DECEMBER 17, 1996

Response to Comment 17.1

No proposed channel modifications or culvert replacements are planned in the vicinity of the subject property Therefore, no changes to the existing 1% flood level will occur.

420 Cypress Drive Los Altos, California 94022

24 December 1996

Mr. Scott Wilson
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Dear Scott:

As you know, I own property on the north side of Adobe Creek abutting the lands of Rogez. I recently discovered that the boundary line between the Rogez property and my property is incorrectly drawn on the plot plans of the City of Los Altos. I believe that this discrepancy may impact the alignment of the easement that the Santa Clara Valley Water District expects to obtain on the Rogez property.

The purpose of this letter is to inform the Santa Clara Valley Water District that I am aware of the revised dividing line between my lands and the lands of Rogez and that I expect the SCVWD to respect this revised boundary. Presumably this line will be clearly demarcated when the lands of Rogez are surveyed for subdivision. 18.1

I hereby request that SCVWD's response to the above request be provided to me before it is presented to the District's Board of Directors in order that I may take further action if I deem the response unacceptable.

Similarly, I also request that the SCVWD's responses to the proposals made in my letter dated 26 November 1996 be provided to me before they are provided to the District's Board of Directors.

Sincerely,

Thomas L Paoli, Ph.D.

RESPONSES TO COMMENTS FROM THOMAS L. PAOLI (Letter 2), DATED DECEMBER 24, 1996.

Response to Comment 18.1

The District has been supplied drawings by a consultant showing the final resolved property lines which will be reflected in the final Engineer's Report.

This document should be considered a response in writing to your comments.

420 Cypress Drive Los Altos, California 94022

24 December 1996

Mr Scott Wilson
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Dear Scott,

After attending the SCVWD Public Hearing on the Adobe Creek Watershed Planning Study held on December 12, 1996, I have the following additional comments and requests

I understood from the revegetation proposal presented at the hearing that the SCVWD intends to plant live oaks and low bushes on the mid-bank bench of Reach 5 In my opinion, this is an unfortunate choice of vegetation for this part of the creek and will do little to mitigate the impact of removing the existing trees and low vegetation on the south side of the creek. Live oaks grow extremely slowly, break easily from their own weight, and require substantial maintenance of their limb structure when they are large. The residents of Cypress Court have witnessed the unexpected collapse of at least four healthy oaks in the last few years. I believe oaks are susceptible to root fungus caused by wet roots and are therefore not suitable for growth in or near a water channel. I also believe that live oaks will not withstand the occasional flow of water around their trunks that will occur when the mid-bank bench carries water 19.1

For the above reasons, I urge the SCVWD to vegetate the mid-bank bench of Reach 5 with coastal redwoods similar to the trees on the north side of the creek. Evergreens of this type take very well to the creekside setting, grow relatively quickly, and provide excellent year round foliage. The combination of evergreens on both sides of the creek will naturalize the disturbed bank in harmony with the existing bank and will lessen the eyesore of the reconstructed land to the greatest extent In addition, redwoods require no limb maintenance and are very robust against storms when grown in clusters The evergreen solution is much preferred to the growth of trash underbrush that will be swept away whenever the current *overflows the low-flow channel.* 192

A second purpose of this letter is to request that the SCVWD define and follow an intelligent plan for preserving the redwoods that currently exist in Reach 5 of Adobe Creek. The BMP for preserving existing vegetation outlined in the Engineer's Report is a reasonable start but needs to be strengthened for construction in the environmentally sensitive Reach 5. I strongly urge that a specific individual be charged with preservation of the existing vegetation and that this individual be on site whenever land is being moved or vegetation is being disturbed. Without a responsible individual on site, contractors will neglect precautions against damaging trees or other vegetation during construction Once these trees have been damaged, they can not be replaced during your or my lifetime. 193

Finally, I am hereby requesting that the bank of "Edith Park" be returned to its natural level as part of the reconstruction of Reach 6. During the past 16 years that I have lived on Adobe Creek, I have observed the Town of Los Altos Hills continually filling this park with mulched cuttings and thereby raising the height of the bank and narrowing the channel A private property owner would not be allowed to change the topography of creekside land in this way and neither should the Town. The ground of the Park should be returned to its original level and the Town should be prohibited from further dumping at this site. 194

I hereby request that SCVWD's responses to the above requests and proposals be provided to me before they are presented to the District's Board of Directors in order that I may take further action if I deem the response unacceptable 195

Sincerely,

Thomas L. Paoli

Thomas L. Paoli, Ph D

RESPONSE TO COMMENTS FROM THOMAS L. PAOLI (Letter 3), DATED DECEMBER 24, 1996

Response to Comment 19.1

The comment regarding the collapse of oaks at Cypress Court is noted. Although the specific combination of tree and shrub species will not be selected until the project's mitigation and monitoring plan is completed, trees and shrubs native to the site will be chosen for revegetation Coast live oak (*Quercus agrifolia*) is among the species native to the Adobe Creek corridor Oaks can be susceptible to rot, such as when oaks are routinely subjected to landscape irrigation. Any oaks planted for project mitigation, however, will not be subject to irrigation, other than that necessary for establishment, and will be of local origin and thus adapted to local conditions. Furthermore, the oaks will be planted higher up the banks where they will only be exposed to water flows during temporary high flows. The oaks will not be exposed to stream flows at all in the summer months. The shrubs selected for mitigation will also be native species of local origin A shrub understory is an essential component of a healthy riparian corridor, providing cover, food, and nesting habitat for many wildlife species

Response to Comment 19.2

Two of the proposed mitigation tree species, coast live oak and California bay (*Umbellularia californica*), are also evergreens. The shrub species listed in the DEIR were chosen for their site compatibility, contributions to riparian corridor habitat values, and their ability to provide excellent erosion control.

Response to Comment 19.3

It is common practice for such BMP's to be made a part of the contract bid documents for the contractor and they are responsible for constructing the project in conformance with those contract bid documents. Please refer to the response to the City of Palo Alto comment 5.7c for more information about the BMP's.

Response to Comment 19.4

The practice of dumping material along the creek would be eliminated when the proposed improvements are constructed. This area has been identified as a potential riparian mitigation area. The implementation of the project and the proposed mitigation measures would replant the existing creek side with native plant material, thus, reverting the area back to its natural state.

Response to Comment 19.5

This document should be considered a response in writing to your comments

A N & S J GRANZOTTI

December 26, 1996

Randall R. Talley, P.E.
Supervising Engineer
and
Scott Wilson
Project Engineer
Adobe Creek Planning Study
Santa Clara Water District
5750 Almaden Expressway
San Jose CA 95118-3686

We have reviewed the Santa Clara Water District Engineer's report and Draft Environmental Impact Report (DEIR) for the proposed project on Adove Creek and we have the following comments to make with respect to **Reach 1** of the proposed project.

Proposed Initial Plan:

1✓ It is our understanding that except for the erosion control measures detailed on pages 7-7 and 7-8 of the DEIR **no other changes will be made to the existing Adobe Creek between Station 262 + 90 and Station 277** (the part of Reach 1 between the Crockford property and the Hetch Hetchy Pipeline). To further clarify the implication of this conclusion, this means that while debris at the bottom of the creek may be removed, all current vegetation on the banks of the creek will remain as is and **no trees will be cut down.** It is our understanding that similar treatment will be applied to Reach 2 with some differences, but still preserving the existing natural habitat. }-20.1

2✓ All existing structures in the proposed right of way for Reach 1 between Station 262 + 90 and Station 277 will not be removed, damaged or otherwise disturbed. As an example the gazebo and the well located on the Gould property will not be disturbed. }-20.2

3✓ No permanent fences will be installed between Station 262 and Station 271 plus 50 feet, that is between the left border of the Crockford Property and the right border of the Gould property (left and right are defined by looking at the front of the property from Glenbrook Drive). All existing fences that are required to be removed during the work detailed on pages 7-7 through 7-8 will be replaced with like materials to the original state. }-20.3

666 GLENBROOK DRIVE ◆ PALO ALTO CA ◆ 94306 1306 USA
PHONE 1 415 494 2224 ◆ FAX 1 415 494-8510 ◆ EMAIL ANGRANZOTTI@MSN.COM

RESPONSES TO COMMENTS FROM A.N. & S.J. GRANZOTTI, DATED DECEMBER 26, 1996

Response to Comment 20.1

Please refer to the previous response to Greenacres I comment 12 1.

Response to Comment 20.2

Please refer to the previous response to Greenacres I comment 12.2

Response to Comment 20.3

Please refer to the previous response to Greenacres I comment 12.3 and 12.5.

Maintenance Plan.

The maintenance plan as described in section 8 of the DEIR **poses a number of problems for the neighborhood** at large and in particular for those who live on Glenbrook Drive. According to this plan, when made "necessary" by future erosion, **considerable alteration to the natural state of the channel could be made with serious impact on the existing vegetation**. Each proposed maintenance procedure for the treatment of an eroded bank, with one or two possible exceptions, will most certainly **require removal of ancient native trees** which today provide a number of benefits to the environment, to the neighborhood quality of life, and to the value of the properties

Since the proposed easements are on the average 75 to 80 plus feet wide throughout the area of concern, and considering the fact that each proposed erosion control measure would require the potential removal of the existing bank soil up to the edge of the right of way, implies that at some point in time, after the initial non invasive procedures are applied, considerable amount of property now enjoyed by each neighbor would be removed, structures would be destroyed, ancient trees would be cut down, etc. **This would cause a very serious impact to the environment, to property values, and to the aestethics of the natural creek environment**. As an example, at the Goulds (663 Glenbrook Drive) approximately 30 % of their existing property could be drastically altered and eliminated, severely impacting their property's value. In this area alone there are 33 native trees, some very, very old, large, and healthy.

Upon analyzing the maintenance plan (section 8 of the DEIR), we have observed that in all of the drawings where a potential removal of several cubic feet of soil is indicated in order to apply the maintenance procedure, no presence of trees is indicated. This omission makes the procedure appear reasonable. In reality there are hundreds of trees in the area of concern and these procedures would be disastrous. If these methods are applied as shown, all trees within the right of way where erosion would occur would be damaged or eliminated over time with no supervision and no recourse for the property owners who have signed their rights away. We must be assured, in a legally binding way that these destructive methods will not be applied in zones where there are trees. Only those methods that protect the existing trees and do not disturb the land and the structures which would be in the right of way should be applied 20.4

We would like to see specific non-invasive maintenance alternatives committed by the Santa Clara Water District. The alternatives could in fact be some of the very approaches indicated in the DEIR, such as the use of rip-rap carried up to the existing level ground without requiring the sloping and removal of existing terrain and trees (see figure 8.20 of the DEIR with modifications, attached). Methods such as this would protect the banks of the creek, maintain the existing profile and allow for native vegetation to survive We find the proposed future maintenance plan, which leaves it to the discretion of future maintenance personnel to implement one of the many methods indicated in your plan, very 20.5

RESPONSES TO COMMENTS FROM A.N. & S.J. GRANZOTTI, DATED DECEMBER 26, 1996, cont.

Response to Comment 20.4

Please refer to the previous response to Greenacres I comment 12 6.

Response to Comment 20.5

Please refer to response to Greenacres I comment 12.6.

The District will specify only non-invasive methods for use in Reach 1 This means that only methods that require no excavation would be constructed in the reach threatening to properties and to the environment and we understand that the mayor and other officials of the City of Palo Alto share our views as well. A simple solution would be for the Santa Clara Water District to modify the current documentation of the plan and specify unequivocally for Reach 1 the methods allowed for future maintenance and limiting such methods to those that will not disturb the environment and existing trees and structures. Only in this manner do we see the maintenance plan as conforming to the principles and the fundamentals of the main initial plan

Sincerely,

A N & S.J Granzotti

A. & S. Granzotti

cc. Palo Alto City Council
Los Altos City Council

P.S.: Portions of this letter were written prior to a brief telephone conversation with Mr. Talley of the Santa Clara Water District prior to the meeting on Dec.12, 1996. During that conversation Mr. Talley indicated that the next revision of the plan would suggest only non invasive methods to be used for the maintenance plan in Reach 1 (perhaps in most areas?). We are looking forward to receiving the next plan revised as indicated herein.

Attachments

RESPONSES TO COMMENTS FROM A.N. & S.J. GRANZOTTI, DATED DECEMBER 26, 1996, cont.

ATTACHMENT TO A.N. & S.J. GRANZOTTI

LETTER

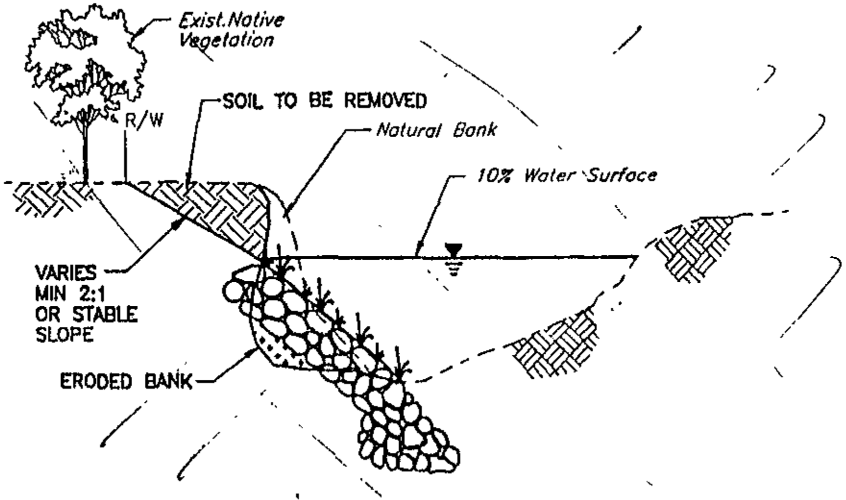


FIGURE 8.19
SLOPE CUTBACK
(ROCK RIPRAP AS EXAMPLE OF REMEDIAL SLOPE PROTECTION)

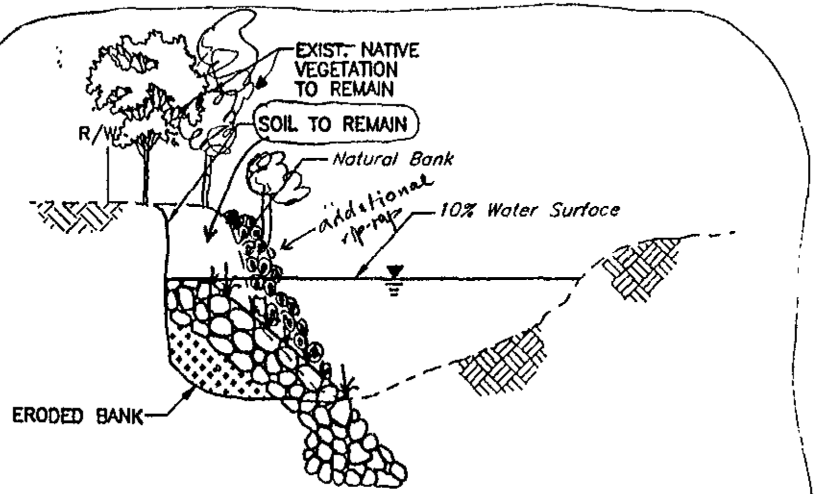


FIGURE 8.20
NO SLOPE CUTBACK
(ROCK RIPRAP AS EXAMPLE OF REMEDIAL SLOPE PROTECTION)

ENVIRONMENT

Adobe Creek project criticized

City Council wants more natural method for flood and erosion control

The Santa Clara Valley Water District's plan to line both sides of Adobe Creek upstream of El Camino Real with rock-filled wire baskets for flood and erosion control met with strong opposition from the Palo Alto City Council on Monday night.

The public has come to appreciate and demand "more benign and natural treatment of our creeks," said Mayor Lanie Wheeler. "I think it would be a serious step backward if we did allow this to go forward without a serious challenge."

The water district is accepting comments on the draft environmental impact report until Jan. 3. Deterioration of the creek's wildlife habitat would be a result of the project, according to the draft EIR.

The council unanimously agreed to ask the district to seek alternative measures that are more environmentally sensitive and attractive, since a portion of the project would be built at the southern entrance to the city next to the Cabana Hotel.

Although businesses fear the project could be a repeat of the two-year headache that resulted from the district's flood work on Matadero Creek north on El Camino, the council was clearly more concerned with the environmental impact.

The rock-filled baskets, known as gabion baskets, used for bank stabilization, would not allow the natural riparian vegetation to reestablish itself, said Palo Alto Senior Planner Virginia Warheit.

Other than commenting on the draft EIR, the city has no authority in the matter.

Craig Breon of the Santa Clara County Audubon Society, who has dealt with the district often, said its engineers are still more comfortable doing flood-control projects the old way—lining the creek bed with concrete, such as has been done on Adobe Creek downstream of El Camino. ■

—*Peter Gauvin*

ATTACHMENT TO A.N. & S.J. GRANZOTTI

LETTER

ENVIRONMENT

Adobe Creek project criticized

City Council wants more natural method for flood and erosion control

The Santa Clara Valley Water District's plan to line both sides of Adobe Creek upstream of El Camino Real with rock-filled wire baskets for flood and erosion control met with strong opposition from the Palo Alto City Council on Monday night.

The public has come to appreciate and demand "more benign and natural treatment of our creeks," said Mayor Lanie Wheeler. "I think it would be a serious step backward if we did allow this to go forward without a serious challenge."

The water district is accepting comments on the draft environmental impact report until Jan. 3. Deterioration of the creek's wildlife habitat would be a result of the project, according to the draft EIR.

The council unanimously agreed to ask the district to seek alternative measures that are more environmentally sensitive and attractive, since a portion of the project would be built at the southern entrance to the city next to the Cabana Hotel.

Although businesses fear the project could be a repeat of the two-year headache that resulted from the district's flood work on Matadero Creek, north on El Camino, the council was clearly more concerned with the environmental impact.

The rock filled baskets, known as gabion baskets, used for bank stabilization, would not allow the natural riparian vegetation to reestablish itself, said Palo Alto Senior Planner Virginia Warheit.

Other than commenting on the draft EIR, the city has no authority in the matter.

Craig Breon of the Santa Clara County Audubon Society, who has dealt with the district often, said its engineers are still more comfortable doing flood-control projects the old way—lining the creek bed with concrete, such as has been done on Adobe Creek downstream of El Camino.

—Peter Gauvin

Palo Alto Weekly • Friday, December 20, 1996 • Page 7

Jay & Muriel Gould

Dec. 30, 1996

Randall R. Talley, P.E.
Supervising Engineer &
Scott Wilson, Project Engineer
Adobe Creek Planning Study
Santa Clara Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Dear Sirs:

We have some additional comments regarding your proposed Adobe Creek flood control plan. We are at Reach 1 and our home at 663 Glenbrook Dr. 21.1

We agree with the opinion of the Palo Alto City Council that the plan should have a "more benign and natural treatment" of our creek.

We feel that you are talented engineers and capable of coming up with an innovative plan that would enhance the environment and appearance of the creek and that it would be so outstanding that it would be a model for creek preservation and would win wide acclaim. We would encourage you to do that.

We are enclosing a copy of "Streamside Planting Guide for San Mateo & Santa Clara Streams." We suggest that you make an effort to encourage owners of property on the creek to plant these to help prevent erosion.

Thanks. John J Gould
Muriel E Gould

P.S. We were disturbed that you brought this up during the holidays and require that comments be in by Jan. 3.

RESPONSE TO COMMENTS FROM JAY AND MURIEL GOULD (Letter 2), DATED DECEMBER 30, 1996

Response to Comment 21.1

The comments are included in the environmental record. No further response is required.

184 Lockhart Lane
Los Altos, CA 94022
December 31, 1996

Scott Wilson
Adobe Creek Planning Study
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Dear Mr. Wilson:

I am grateful for the effort of the Water District in preparing the DEIR for Adobe Creek—especially your desire to be sensitive to the needs of the community and the environment. I do, however, have several concerns which should be addressed.

- You indicate that the bird nesting season will be designated as March through June. In truth, several local species including Plain Titmouse, Anna's Hummingbird, and several raptors may begin to nest in February; and others including California and Spotted Towhees and several woodpecker species may be still nesting in July (or even later). Your crews should be aware of this possibility. 22 1

- The DEIR is vague about the nature of herbicides which may be used to remove vegetation from the creek right of way. To state that "only [herbicides] approved for use in aquatic areas by the California Department of Pesticide Regulations" is inappropriate. Pesticides may be "registered" for a certain use, but they are never "approved" by a regulatory agency. Also, The Food Quality Protection Act of 1996 — signed by President Clinton on August 3—preempted the stricter pesticide laws of all states. Never-the-less, stricter regulations may be formulated if overall exposure is deemed a threat. The SCVWD should update the herbicide component of this report to reflect this new law, and, *include the names of candidate compounds so their potential impact can be evaluated.* 22.2

- The regulation allows removal of ≤ 6" diameter trees without evaluation. Such a policy *could* ensure that no trees approaching 6" diameter survive, and thus larger trees never be replaced as they die of natural causes. Policy should ensure that "heritage" trees gradually be replaced by younger trees. 22.3

- The new "regular maintenance" policy sounds good on paper, but may result in a "scorched earth" effect along the creek. The frequency of maintenance should be more carefully delineated, such that vegetation removal and structural repairs only occur in response to evidence based on regular inspections. 22 4

Sincerely,

Ruth Troetschler

Ruth Troetschler

RESPONSES TO COMMENTS FROM RUTH TROETSCHLER, DATED DECEMBER 31, 1996

Response to Comment 22.1

While some species do commence nesting prior to March and not all nesting is completed by July, the majority of nesting activity occurs during March through June. Furthermore, construction will occur in the dry season, and thus avoid the late-winter, early-spring nesting period.

Response to Comment 22.2

The California Department of Pesticide Regulations (CDPR) approves herbicides for use in California. The District only uses approved herbicides for applications listed on their label as an appropriate use. When the CDPR approves a herbicide it is for the uses listed on the product label.

The Food Quality Protection Act of 1996 is legislation that regulates the use of pesticides and herbicides which are used on food products, and has no relevant jurisdiction over the use of these chemicals as part of maintenance program identified in the Engineer's Report. The EIR does not specifically state the herbicide currently in use by the District because the herbicide used changes when the State changes regulations. The District will only use approved herbicides.

Response to Comment 22.3

It is not clear to what this comment refers. Mitigation for tree removal is described in the EIR (pg 79). The comment is hereby noted and included in the environmental record.

Response to Comments 22.4

The intent of the new Maintenance Program is consistent with the content of your letter. District maintenance planners perform yearly inspections of creeks in the county and maintenance is scheduled based on need. If maintenance is not needed, none is done. No vegetation is removed or erosion repaired unless it is absolutely necessary.

25435 Fremont Road
Los Altos Hills, CA 94022
January 1, 1997

Mr. Scott M. Wilson, PE
Flood Control Planning Division
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

Dear Scott:

Thank you for sending Chapter 8 of the draft *Environmental Impact Report* to me so quickly

As I mentioned during our telephone conversation a few weeks ago, the sheets that show the easements desired by the S.C.V.W.D. for Adobe Creek for Reach 6 are in error. Adobe creek is contained within my rear property boundary along the Wieners, Merideths, Eckerts, Taylors, and Burchs. Thus S.C.V.W.D. would need to obtain an easement from me for both sides of the creek. For example the Eckerts' S.C.V.W.D. easement only reaches their rear property boundary which falls short of the creek.

My property boundary is defined by the metes and bounds of the Glenwood Park Map for lot 6, Tract 1105, Book 51, pages 44 and 45 in the Office of the Recorder of the County of Santa Clara. These metes and bounds have been surveyed and monuments that represent this boundary can be found on the far side of the creek from my house. The agreements reached between Eckerts, Merideths, and the Burchs have been recorded at the Santa Clara County Recorder's office under Book M759 Page 1807, Book M725 Page 303, Book N177 Page 2100 respectively.

23.1

Would you please pass this information along to the appropriate group within the S.C.V.W.D. so that their documents can be corrected.

Please let me know if you need any additional information.

Sincerely,

Thomas C. Mandle

RESPONSES TO COMMENTS FROM THOMAS C. MANDLE, DATED JANUARY 1, 1997

Response to Comment 23.1

The final version of the Engineer's Report will reflect the corrected property lines where possible.

ORIGINAL DOCUMENT IN FILES

January 3, 1997

Mr. Scott Wilson
Adobe Creek Planning Study
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Subject: Adobe Creek Watershed Planning Study Engineer's Report and Draft Environmental Impact Report

Dear Scott,

This sizeable document could be called a high watermark in District planning. Thank you for giving the Adobe Creek Watershed Planning Study as thorough an evaluation as you have, and for working so assiduously with all concerned parties to address their site specific needs.

For the last twenty years there have been a series of citizen activities to increase awareness for the values of Adobe Creek, both as to the aesthetics and the animal habitat and riparian cover that accompany a healthy stream. I will attempt to amass as much of this background material as possible to give you an idea of the wealth of these efforts and their scope.

The establishment of the Redwood Grove Nature Preserve was the culmination of one extensive citizen envolvement in the mid-'70s, and that preserve's maintenance guidelines should be referenced in this watershed review. It is laissez-faire, dead trees are for bugs and birds, no pesticide use, and the blackberry bushes slow down floodwaters nicely.

As the likelihood of a trail ever being realized between Shoup Park and the Redwood Grove is negligable, the streambed in dry months provides that link to young children anxious to explore. The thick canopy of blackberry bushes gives privacy to the homeowners on either side and property protection, and the children can pick berries as they stroll. Please do not alter this rare world of passive recreation and wildlife refugia. 24.1

The Redwood Grove Nature Preserve has a very popular summer camp program and the naturalist Keith Gutierrez (917-0342) is very resourceful in park management. After installing elaborate tree trunk diversionary erosion control in the past which only caused other erosion problems to the roots of the redwoods, as per consultation with the Department of Forestry, the successful methods Keith now uses is simply a judicious placement of tree boughs at high velocity meanders. So, please flag this 15A and 16 sheet profiles for maintenance to be aware of these constraints, and to contact Keith or Brian McCarthy of park maintenance before any work is done here.

On sheets 17, 18 and 18A there is the 80 foot conservation easement on the western bank of Adobe which also has further maintenance constraints. It was a consideration in establishing the dense conservation corridor from Shoup Park to O'Keefe Lane that it would be a natural form of flood protection, to slow down stormwaters, as both the Redwood Grove and Shoup Park have recreation buildings in the flood plain.

In earlier citizen advisory groups with the District, it was a strong recommendation that pesticide maintenance methods not be conducted in Adobe Creek, not conducted by maintenance vehicles running up and down the creek, but that hand maintenance be done only after routine review as to need. 24.2

RESPONSES TO COMMENTS FROM LIBBY LUCAS, DATED JANUARY 3, 1997

Response to Comment 24.1

The District has no plans to alter this situation at the described location. If vegetation maintenance is performed, only vegetation in the creek channel is trimmed. The vegetation on the creekbanks would not be removed.

Response to Comment 24.2

As stated in the Maintenance Program Chapter of the Engineer's Report, vegetation will only be removed if it is an obstruction to flow. Vehicles and herbicides are used only in situations where other methods are not feasible.

Another concern in grading the creek for vehicle access is that deep pools for fish refugia will all be lost. This is very important for Adobe Creek, which historically was a perennial stream, but which now, due to extensive pumping by any number of streamside residents and public agencies, in the summer months is reduced to underflow and may be called intermittent. It would be preferrable if the District could identify these drop structure pools as necessary to any fishery survival capability and work around them. -24.3

Inspite of the concrete conduit into which Adobe Creek has been modified from Charleston Road to the Bay, there should be the consideration that if the historic outfall to Charleston Slough was ever accomplished, the fishery capability might be reestablished and the upper watershed of Adobe Creek be accessible in wet years. This should be your design criteria for these 16 reaches up into the open space preserves.

Please note that the Los Altos Hills Byrne Park preserve encompasses the Moody Creek tributary, some 60 acres of watershed open space, and the flood plain acreage between Purissima and Adobe north of#280 is Town open space. Also the watershed acreage is more accurately assessed at 11 square miles.

Congress requires that all federally funded flood control efforts consider acquiring watershed property before proposing more costly construction. As this Adobe Creek watershed planning study cannot be said to be federally funded this mandate is not applicable, but the underlying consideration of the wisdom of watershed preservation should be seriously addressed. -24.4

The upstream reservoir alternatives as reported in June 1985 and again in the 1989 EIR were not as sensitively conceived for the designated land use and downstream site specific needs as the spirit of the congressional consideration required. An instream reservoir is not a viable alternative.

As one third of the watershed appears to be under conservation and open space protection, it would be a different approach to assess the sponge retention of wetlands, oak woodlands and grass planted floodplains. The option of buying floodplain easements to maximize the retention potential of stream buffers and basins, and the design capabilities of berming any extensive streamside parking areas has not been studied. The adjustment to your one percent flood flow, I feel, would be considerable, and in this respect I found your former and your present environmental assessment to be deficient.

As stated in the Santa Clara County General Plan: "Creeks and streams are important and irreplaceable natural resources...retained in their natural state they maintain water quality, wildlife diversity, aesthetic values, and recreational opportunities...(we) should attempt to preserve and re-establish fisheries in streams within the County...address watershed management practices to reduce soil loss and excessive runoff...setback areas should be provided along natural creeks and streams, - deeded to insure preservation."

Any preservation of upstream wetlands buffers the effect of high flow periods and mitigates the consequences of low flow and extended drought. The net benefit is that it minimizes future flood losses and improves protection of the ecological integrity of a fragile environment.

In consideration of the 1600 acreas that Frank and Josephine Duveneck donated to public open space and the diligence with which Palo Alto manages their Baylands preserve, there can be no question in your minds as to the importance of maintaining Adobe Creek as a lush and healthy riparian corridor.

RESPONSES TO COMMENTS FROM LIBBY LUCAS, DATED JANUARY 3, 1997

Response to Comment 24.3

District biologists will perform "fish rescues", if necessary, prior to the construction within those areas. Furthermore, vortex rock weirs have been designed to incorporate pools, as stated on page 74 of the DEIR.

Response to Comment 24.4

The option of buying floodplain easements was not addressed in the Engineer's Report because there are not any significant floodplains that have the potential to change in use so they would not be available for floodplain use. Some examples of current floodplains that are not expected to change in use are: *Los Altos Hills open space areas, Foothill College parking lots and athletic fields, and* Los Altos Parks. Other remaining floodplain areas do not control or store any significant volumes of floodwaters. The Engineer's Report does address upstream and offstream storage at various locations in the Adobe Creek watershed. A discussion of buying floodplain easements and berming parking areas has been added to the final version of the Engineer's Report.

Citizens groups can convene and tramp up and down the Creek every decade and attempt to monitor your activity in between, but it is in your power alone to see that Adobe Creek is not manhandled.

According to Audubon experts your nesting season is in error. As background data you need to have the reports from the August, 1986 walks of Los Altos Creeks that four Auduboners did at the request of the planning department. 24.5

In mitigation planting areas, if there have to be any (I much prefer that mitigation be only as a last resort, avoidance is the preferred option, and accomplished as close to the point of tree loss as possible), please plant in groups, do not remove existing planting that is holding streambanks in place until mitigation planting is sufficiently mature to hold, in floodflow. Trees under 6" should not be considered expendable. If the species is right and the location is good they should be retained. 24.6

Mitigation for loss of tree cover and riparian wetlands should be assessed 24.7
on linear feet loss rather than acreage. I am not entirely comfortable with a
wetlands assessment that was conducted in the summer months of a drought
year and so request the opportunity to respond to this aspect of your study 24.8
after some field review when the flood water subside in the Adobe corridor.

On page 8-23 in regards vegetation and sediment removel, I do not feel that mechanical vegetation removal or use of aquatic herbicides are justified in modified channel sections, and definitely not in unmodified channel areas. This Adobe Creek is a natural stream corridor not a drainage ditch. The Urban Streams Restoration Grants that were allocated two years entailed the use of private citizens in this type of stream care and this is the approach that the communities felt was appropriate to their needs and desires. 24.9

The maintenance roads and access ramps were sufficient in the last twenty years of light maintenance and I don't believe any new are necessary as they are accompanied by maintenance and herbicides which are not to be used and locked fences which are a deterrant to normal wildlife passage. 24.10

The trust and confidence of the public at your recent public hearing should not be misconstrued as an invitation to remove any part of Adobe Creek access or ambiance. ie Fencing of mitigation areas is unnecessary. Any loss is invariably due to drought or flood which a fence can not alter. 24.11

I request a continuance for delivery of support documentation within 10 days.

Sincerely, Libby Lucas Libby Lucas, 174 Yerba Santa Ave., Los Altos 94022

RESPONSES TO COMMENTS FROM LIBBY LUCAS, DATED JANUARY 3, 1997

Response to Comment 24.5

Please refer to the response to comment 22.1 from Ruth Troetschler regarding bird nesting seasons

Response to Comment 24.6

This comment is included in the environmental record. Your comment will be considered in the preparation of the mitigation and monitoring plan.

Response to Comment 24.7

Please refer to the response to the City of Palo Alto comment 5.6f regarding the assessment of riparian impacts on an acreage vs. linear foot basis

Response to Comment 24.8

While the comment might be valid regarding the assessment of isolated wetlands, the dry season, even if during a drought year, is an ideal time to delineate streams such as Adobe Creek. Its boundaries for the purposes of wetlands delineations are defined as the area confined to the ordinary high water (OHW) mark. Many characteristics evaluated to determine this OHW mark during the delineation are easier to identify in the dry season. These characteristics include the edge of vegetation (e g. blackberry), sediment deposits, and scour marks. Based upon the experience of the consultant conducting the delineation, anecdotal information, and the Army Corps of Engineers' verification of the delineation, the District accepted the results of the wetlands delineation

Response to Comment 24.9

Vegetation removal and herbicide use are only proposed for the area from the toe of bank to the toe of the opposite bank This keeps the flow area of the creek open without disturbing the creek banks

Response to Comment 24.10

Access to Adobe Creek for routine maintenance and emergencies is always a critical issue Having maintenance ramps in close proximity to erosion repair sites minimizes damage to the creek caused by vehicles having to travel long distances in the creek. The District is trying to get access in each section of the creek to minimize these impacts.

Response to Comment 24.11

The comment is hereby acknowledged and included in the environmental record No further response is required.

January 3, 1997

To Terry Neudorf
Santa Clara Valley Water District

I wish to concur with the statements of the City of Palo Alto planning department that proposed projects for Adobe Creek use as few artificial structures as is lypossible.Eventually even the gabion baskets will fail A vegetative cover with deep rooting ability will give the most permanent and ecologically sound solution to flooding and erosion problems along Adobe Creek. The plants will hold the banks better if they are planted in the native soil not on top of rock baskets My experience with the creek is that the adobe is pretty stabile where it has not been disturbed Plants will hold the banks while providing habitat as well as esthetically benefiting the properties along the creek My experience with Adobe Creek goes back to 1964, most of the degradation of this creek has occurred due to vegetation removal by public agencies or by invasion of exotic plants.

25.1

As mentioned in the EIR, historically Ohlone Native Americans have lived along this creek and many artifacts have been found. There is no doubt that some will surface when work is done on the lands of Roget near the Edith Ave. bridge I found a pestle there when the old bridge was removed a few years ago

My other concern is about maintenance; preventative cutting of some vegetation during the dry months done by hand is the least destructive way to go. Most of the floods which have occurred recently in the Edith area might of been prevented if the trash had been removed in early fall. Gardeners in the area leave cuttings Where the first windy storm carries them into the water and they clog up a culvert. My Town of Los Altos Hills committee has cleaned up the creek at Edith Park in October two different years. We removed bed springs, small trees, Kitchen cabinets and some household waste If this were done regularly much of the damage due to flooding would be prevented

My other comments refer to page numbers in the EIR and appendices. I hope that they can be of help

Sincerely,
Jean Struthers
13690 Robleda Road
Los Altos Hills, Ca 94022

RESPONSES TO COMMENTS FROM JEAN STUTHERS, DATED JANUARY 3, 1997

Response to Comment 25.1

As noted on page 52 of the DEIR, three species of fish were observed in the project area during surveys. The DEIR further states that rainbow trout are probably present upstream of the Foothill College channel modification site, and trout may occasionally be washed downstream into the project site. Steelhead are an anadromous form of rainbow trout, and fingerling-sized steelhead and rainbow trout are extremely difficult to visually distinguish from one another Please refer to responses to Ruth Koehler comments 14 13 and 14,14, regarding cultural resources.

Adobe Creek EIR

p48 Steelhead fingerling size observed in Shoup Park 1995 Steelhead caught in Adobe Creek in El Retiro by my son in early 1970's Comment in EIR that no fish are to be found is erroneous Pools occur in the El Retiro area and fish may be found there year round

p50 add oppossum, grey fox and jack rabbit to the list of mammals. I have seen them on various occaisions on my property
Birds seen: California Quail, Great Horned Owl, Red Shouldered Hawk, Great Blue Heron, and once an American Egret were observed in this area 25.2

p84 Mitigation along Adobe Creek

Plants native to the Adobe Creek drainage basin should be selected. There are many areas along roads where these natives can be found ie, Robleda, Moody, Rhus Ridge and at Hidden Villa Ranch. On Lands of Roget the very tall Eucalyptus will be removed. This is home to the hawks and owls in certain seasons Will tall species of trees be included in the mitigation planting so as to provide habitat for these species? 25.3

p103 Plants to add ..
Cornus glabrata, Cornus stolonifera, Ribes aureum, Malacothamnus fasiculata, Solanum umbellifera, and Baccharis pillularis consanguinium should be added to the shrub list since they occur in the same drainage basin near the creek. In the Robleda drain the rush Juncus patens is along the water edge and is an extremely good plant for erosion control. 25.4

submittedby
Jean Struthers
13690 Robleda Road
Los Altos Hills, 94022

RESPONSES TO COMMENTS FROM JEAN STUTHERS, DATED JANUARY 3, 1997

Response to Comment 25.2

The wildlife species listed in the biotic habitat descriptions are examples of species expected to occur in the area. A complete list of all species observed or expected to occur in the project site is provided in Appendix C of the DEIR. The list is hereby amended to include black-tailed hare (*Lepus californicus*) as a species predicted to occur on the project site. The other species identified by the comment are already listed in Appendix C as predicted or observed on the project site

Response to Comments 25.3

As stated on page 103 of the DEIR, lists trees likely to be planted for mitigation include several tall species such as oaks (*Quercus* sp), California sycamores (*Platanus racemosa*), and Fremont cottonwoods (*Populus fremontii*).

Response to Comment 25.4

The commentor's proposed additional mitigation species will be considered during design of the Mitigation and Monitoring Plan.

ALTA MESA IMPROVEMENT COMPANY
[illegible]
ALTA MESA MEMORIAL PARK CEMETERY
695 ARASTRADERO ROAD
PALO ALTO CALIFORNIA 94306 3899
TELEPHONE (415) 493 1041
FAX (415) 493 0247

January 6, 1997

Mr. Scott Wilson
Adobe Creek Planning Study
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Re: Adobe Creek Watershed Planning Study Engineer's Report ("Engineer's Report") and Draft Environmental Impact Report ("DEIR")

Dear Mr. Wilson:

We thank you for your letter of November 6, 1996 and the enclosed Engineer's Report and DEIR. We have reviewed the Engineer's Report and DEIR and have comments as set forth below. 26.1

Based upon our review of the Engineer's Report and DEIR, it appears that the following actions are proposed to be taken in connection with lands of Alta Mesa Memorial Park which border upon Adobe Creek ("Creek"):

1. Three bank stabilization projects at Stations 304+00, 307+40 and 311+30.
2. Upgrading of an existing access ramp to the Creek.
3. Acquisition of a permanent maintenance easement.
4. The establishment of a staging area and access for construction on Alta Mesa property.

BANK STABILIZATION PROJECTS

Any bank stabilization projects along the Alta Mesa property should only be done in consultation with Alta Mesa and only after such projects and all matters relating to such projects have been approved by Alta Mesa.

UPGRADE OF EXISTING ACCESS RAMP

We are unalterably opposed to any access ramp to the Creek for the following reasons: 26.2

1. Any access ramp to the Creek would critically restrict our plans for full cemetery development.
2. Any access ramp would be contrary to our Declaration of Dedication of cemetery property, which states that the use of this land is to be exclusively for private cemetery purposes.

RESPONSE TO COMMENTS FROM ALTA MESA IMPROVEMENT COMPANY (MARILYN TALBOT), DATED JANUARY 6, 1997

Response to Comment 26.1

The comment is hereby acknowledged and included in the environmental record. No further response is required.

Response to Comment 26.2

The comment is acknowledged and hereby included in the environmental record. The District is currently seeking an agreement with Alta Mesa for the use of an access ramp on the Alta Mesa property so that extensive negotiations do not have to occur every time access is required

EASEMENT

While we recognize that the District needs the legal right to come onto the property of those property owners which border the Creek to perform maintenance functions, we are not, at this point, convinced that a permanent easement is necessary to do so. Other legal rights, such as license rights, would give the District the necessary authority to enter and perform Creek maintenance functions. Agreements such as license agreements tend to be for a limited period of time and for a specific scope of activities. Easements, on the other hand, are generally in perpetuity and tend to be very broad in terms of activities permitted by the easement holder. Given the extensive involvement which we wish to have in all matters concerning the Creek bank adjacent to our property and given the sensitive nature of the use of our property, it may be more appropriate for Alta Mesa and the District to consider the use of a license agreement rather than an easement agreement. 26.3

STAGING AREA AND ACCESS FOR CONSTRUCTION

We do not feel that use of a portion of our property for the ramp improvement staging area and access for construction would be appropriate. We would encourage the District to locate other property where ramp improvement staging areas and access for construction would be more consistent with the existing uses of that property. 26.4

CONSTRUCTION TRAFFIC AND NOISE

Construction by the District in the vicinity of Alta Mesa, although off site, will have significant traffic and noise impacts on Alta Mesa. Traffic impacts will impede the ability of users of the cemetery facilities to access those facilities peacefully and uninterruptedly. For example, we are concerned that funeral processions to the cemetery which are delayed by District construction activities will unnecessarily irritate or distress already distressed and grieving family members and friends of a deceased. In addition, the noise associated with District construction will violate the peaceful and serene setting and surroundings of the cemetery, a characteristic which is vital to the cemetery. We do not feel that either the Engineer's Report or the DEIR adequately address adverse traffic and noise impacts of District construction on Alta Mesa's operations and therefore request that it be further studied. 26.5

The above comments are not an exhaustive list of comments on the part of Alta Mesa. They only represent the more significant comments which Alta Mesa has as of this date relative to the proposed project described in the Engineer's Report and the DEIR. Alta Mesa's failure to make any comments to the Engineer's Report and the DEIR in this letter shall in no way be deemed to be a waiver of its right to make such comments in the future. Alta Mesa reserves the right, at any time, to make additional comments or to alter or supplement the above comments. 26.6

Thank you for your attention to and consideration of the matters contained herein.

Very truly yours,

Marilyn Talbot
Manager

RESPONSE TO COMMENTS FROM ALTA MESA IMPROVEMENT COMPANY (MARILYN TALBOT), DATED JANUARY 6, 1997, cont.

Response to Comment 26.3

The District is not allowed to expend public funds on private property; therefore, the District must have easements to perform any work on your property Due to the special needs of the Cemetery, provisions could be placed on the use of those easements, so that they would not interfere with operations of the cemetery The proposed easement has only been drawn to the top of the existing creek bank, and would not encroach onto useable cemetery property

Response to Comment 26.4

The comment is acknowledged and hereby included in the environmental record No response is required.

Response to Comment 26.5

As has been the custom in the past, any proposed District construction and/or maintenance activities would be coordinated and scheduled with Alta Mesa personnel so that it will not interrupt funerals No trucks or maintenance vehicles would interrupt funeral processions. No activities would take place in the creek that would interfere with the cemetery activities.

Response to Comment 26.6

The comment is acknowledged and hereby included in the environmental record No response is required.

Mr. Scott Wilson
Adobe Creek Planning Study
Santa Clara Water District
5750 Almaden Expressway
San Jose, CA 95118

Dear Mr. Wilson,

Thank you for the review copy of your Engineer's Report and DEIR and the opportunity to comment. The legal name of Hidden Villa is The Trust for Hidden Villa, "The" having been omitted in the DEIR. 27.1

On page 114, Section II-F there is reference to a waste storage area which contained "29-55 gallon drums." The drums are leftover from horse show days when they were used for jumping. Our hopes are to remove all the debris both there and in the landfill when we have raised the funds to do so. 27.2

We have noted that a portion of Hidden Villa land, the lower approximately one acre closest to Murietta Lane, has been selected as a possible mitigation site. While Hidden Villa's Board of Trustees wholeheartedly supports riparian restoration on Adobe Creek, our current five-year plan -- 1996 - 2001 -- precludes our encumbering our property with easements of any kind which might have the effect of restricting future uses of the land. 27.3

We look forward to being apprised of your plans as the project progresses.

Sincerely,

Judith Steiner
Executive Director
949-8654

Printed on recycled paper

HIDDEN VILLA
26870 Moody Road, Los Altos Hills, CA 94022 • (415) 949-8650

RESPONSE TO COMMENTS FROM THE HIDDEN VILLA (JUDITH STEINER), NOT DATED

Response to Comment 27.1

The comment is acknowledged and is hereby included in the environmental record. The revised text is presented on page 101 in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR**, of this document.

Response to Comment 27.2

The comment is acknowledged and is hereby included in the environmental record. The revised text is presented on page 101 in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR**, of this document.

Response to Comments 27.3

The comment is acknowledged and is hereby included in the environmental record. The revised text is presented on page 101 in Section III, **REVISIONS TO THE TEXT OF THE DRAFT EIR**, of this document.

PUBLIC HEARING

RESPONSE TO COMMENTS DURING THE SANTA CLARA VALLEY WATER DISTRICT, BOARD OF DIRECTOR'S MEETING, DATED DECEMBER 12, 1996

Comment from Robert Stutz

How much more will the water table be lowered past the El Monte/Moody/Elena corner?

Response to Robert Stutz

Due to the abundance of groundwater in that area, the proposed project is not expected to significantly lower the water table in that area.

Comment 1 from Chris Casto

What is the difference between the new maintenance easement that is written in the report vs. the old maintenance easement?

Response to Comment 1 from Chris Casto

The District has worked with a single easement type for many years. This easement allowed creek maintenance work or new construction. At the request of residents along Adobe Creek, the District created a new "Maintenance Only" easement. This easement allows creek maintenance and vegetation removal only. It cannot be used for new channel construction. Both easements are defined in Appendix G of the Engineer's Report.

Comment 2 from Chris Casto

She expressed concern that the revegetation mitigation in gabions would not happen as soon as it was indicated.

Response to Comment 2 from Chris Casto

The gabions will be revegetated upon the completion of the construction within each improvement area.

Comment 3 from Chris Casto

She also had concerns about the ten Live Oaks that are scheduled for removal and asked the District to look at the issue.

Response to Comment 3 from Chris Casto

The comment is hereby noted and included in the environmental record. No further response is required.

RESPONSE TO COMMENTS DURING THE SANTA CLARA VALLEY WATER DISTRICT, BOARD OF DIRECTOR'S MEETING, DATED DECEMBER 12, 1996, cont.

Comment from Bob Nevin

Is concerned that the report stated that replacing the culvert at Yerba Buena would not reduce flooding, and that any work done to the culvert would be delayed until another agency shares the cost.

Response to Bob Nevin

The Engineer's Report states that the District will not replace the culvert until it is replaced for other reasons such as traffic, safety, etc. Please refer to the response to Ruth Koehler comment 14.8.

Comment from Paul Lippe

Asked if the development of the 5.2 acre parcel adjacent to Adobe Creek in Los Altos Hills be sequenced to have the District improvements of Adobe Creek be completed first.

Response to Paul Lippe

Please refer to the response to the Town of Los Altos Hills comment 4.2.

Comment from Tom Sherlock

Is concerned with the provisions planned for the drainage of the tributary along Moody Court which previously drained into a lower portion of the Hidden Villa field which has since the field has been raised.

Response to Tom Sherlock

There are no provisions in the Adobe Creek report to deal with this tributary to Adobe Creek, since there are no planned improvements in that area. If this is a continuing problem, the District recommends that you contact the Town of Los Altos Hills or Santa Clara County (if unincorporated area). This tributary is not within the District's jurisdiction.

Comment from Jeff Peterson

Asked to have the improvements in Reach 5 be moved up on the construction schedule to reduce the impacts to these houses. In addition, the District should coordinate with the Town of Los Altos on the design of the mitigation areas proposed within Edith Park.

Response to Jeff Peterson

The District plans to work with the Los Altos Hill Environmental Design Committee and understands that the Town Council will have to approve the mitigation site design prior to construction. Please refer to the Town of Los Altos Hills response to comment 4.2 regarding the Reach 5 construction acceleration request.

Comment from Sabra Abraham

There are fish in the creek and requested that the Board consider effects on current species and not worry about repopulating once they have been destroyed.

Response to Sabra Abraham

The District has performed a complete fish survey that is documented on page 48 of the DEIR. Before construction, the District will be performing Steelhead and Red-Legged Frog surveys. The proposed project is also designed to be "fish friendly". In addition, please refer to the response to CDFG Letter 1, comment 1.7, and Libby Lucas comment 24.3.

THE FOLLOWING SECTION CONTAINS REVISIONS TO THE TEXT OF THE DRAFT EIR. ALL DELETIONS ARE SHOWN ~~WITH A LINE THROUGH THE TEXT~~, AND ALL NEW TEXT INDICATED WITH UNDERLINING. All Page number references are to the pages in the Draft EIR unless otherwise noted.

The following edit is made throughout the Draft EIR:

> Replace "Trust for Hidden Villa" with The Trust for Hidden Villa.

Page 27, the third sentence of the second paragraph is revised as follows:

> Other land uses along the creek include Terman Park and Jewish Community Center, located just downstream of the Hetch Hetchy Pipeline, and the ~~former~~ Cabaña Hotel ~~(proposed villages at Creekside Subdivision)~~, located along the right bank of the creek at El Camino Real.

Page 38, the first sentence of the sixth paragraph is revised as follows:

> The majority of this reach lies adjacent to open pasture land owned by ~~the~~ The Trust for Hidden Villa (a nonprofit corporation).

Page 56, Table 6 is revised as follows:

TABLE 6
CULVERT REPLACEMENT SITES HABITAT ACREAGES

Habitat	El Camino Real (Reach 1, Station 250+95)	Yerba Buena Avenue (Reach 4, Station 364+88)	Foothill Expwy. (Reach 5, Station 377+00)	Burke Road (Reach 7, Station 422+30)	O'Keefe Lane (Reach 9, Station 491+30)	Tepa Way (Reach 13, Station 559+40)	Total
Culverts and transition structures	0.30	0.04	0.11	0.02	0.03	0.03	0.53
Mixed Riparian Forest	0.03 ~~0.01~~	<0.01	0.03	0.00	0.00	0.00	0.06 ~~0.04~~
Riverine	0.15	0.03	0.05	0.02	0.03	0.03	0.31
Landscape/Non-native	0.09	0.01	0.01	0.01	0.02	0.03	0.17
Total Project Area*	0.42	0.05	0.16	0.04	0.07	0.07	0.81

*Habitats overlap, therefore total site acreage is less than the sum of the individual habitats shown above.

Page 62, Table 8, Special Status Species that could occur at Adobe Creek has been revised. See Final EIR (Page 61) for revised Table.

Page 64, the first sentence of the third paragraph is revised as follows:

> Steelhead Trout (*Oncorhynchus mykiss*) Federal listing status: ~~none~~ threatened; State listing status: Species of Special Concern Steelhead trout are an anadromous (i.e., migrates upstream from a lake or ocean to spawn) form of rainbow trout.

Page 67, the following text is added to the end of the third paragraph.

> The City of Palo Alto also has a tree ordinance (Ordinance No. 4362), that protects Coast Live Oak and Valley Oak trees that are 11.5 inches or more in diameter at 4.5 feet above natural grade.

Page 71, the sixth paragraph is revised as follows:

> Additionally, the project site does not support suitable habitat for the ~~steelhead trout,~~ chinook salmon~~,~~ and foothill yellow-legged frog. Although steelhead may be able to move into the project area, steelhead habitat on site is marginal at best, and the presence of the species is considered unlikely. Adobe Creek is a highly disturbed stream subject to intermittent flows and lacking deep pools. In the summer and early fall, the majority of the project area is dry. Some shallow (less than 2' deep) pools remain in the Foothill College project site through the summer and fall but are considered very marginal for steelhead. Furthermore, project work will be conducted in the dry season when steelhead would not be present. Therefore, project implementation would result in a less-than-significant impact upon these species.

Page 72, the sixth paragraph is revised as follows:

> The creek supports only intermittent flow in most areas and is dry most of the year, although Foothill College usually has water all year. ~~In addition, there are impassable barriers downstream of the project area that preclude movement of anadromous fishes upstream.~~ In addition, the creek lacks deep, perennial pools and has numerous in-stream barriers to fish movement. Thus, the fisheries resources of the creek are extremely limited, thereby reducing the potential for significant impacts to occur. Limited loss of fish during project construction is expected to occur since construction would take place during periods of low flow. Likewise, effects on stream temperatures are not considered a relevant issue for resident fish in the project area. Nevertheless, the project includes mitigation for any loss of channel shading that could increase stream temperatures.

Page 78, the third paragraph is revised as follows:

> Implementation of the proposed project would result in the loss of a total of 1.40 ~~1.38~~ acres of habitat in the riparian corridor, as shown in Table 11. Table 12 summarizes the riparian corridor impacts by reach.

Page 78, Table 11 is revised as follows:

TABLE 11
RIPARIAN CORRIDOR IMPACTS SUMMARY

Site	Riparian Habitat (Square Feet)			Total Impact Area	
	Low Value	**Medium Value**	**High Value**	**Square Feet**	**Acres**
West Edith Avenue	16,001	4,058	150	20,209	0.46
Foothill College	2,785	4,535	10,096	17,416	0.40
Culvert Sites	2,924	9,367 ~~8,467~~	125	12, 416 ~~11,516~~	0.028 ~~0.26~~
Erosion Repair Sites	8,423	2,671	0	11,094	0.25
Total	**30,133**	**20,631 ~~19,731~~**	**10,371**	**61,135 ~~60,235~~**	**1.40 ~~1.38~~**

Page 79, Table 12, Riparian Corridor Impacts by Reach has been revised. See Final EIR (Page 78) for revised Table.

Page 80, Table 13 is revised as follows:

TABLE 13
TOTAL TREE STEM LOSSES WITHIN RIPARIAN CORRIDOR HABITATS

	1-11" dbh	12-17" dbh	>18" dbh	Total
Native Trees	256 ~~255~~	14	5	275 ~~274~~
Non-Native Trees	128 ~~120~~	7 6	17	152 ~~143~~
Total	**384 ~~375~~**	**21 ~~20~~**	**22**	**427 ~~417~~**

dbh = diameter at breast height

Page 80, Table 14 is revised as follows:

TABLE 14
CULVERT REPLACEMENT SITE IMPACTS

Culvert Sites	Riparian Habitat (Sq Ft)			Total Impact Area	
	Low Value	Medium Value	High Value	Square Feet	Acres
El Camino Real	360	4,046 ~~3,146~~	25	4,431 ~~3,531~~	0.10 ~~0.08~~
Yerba Buena Avenue	250	56	0	306	0.01
Foothill Expressway	595	2,200	100	2,870	0.07
Burke Road	544	1,100	0	1,644	0.04
O'Keefe Lane	690	1,220	0	1,910	0.04
Tepa Way	485	745	0	1,230	0.03
Total	**2,924**	**9,367** ~~**8,467**~~	**125**	**12,416** ~~**11,491**~~	**0.29** ~~**0.26**~~

Page 81, the first paragraph is revised as follows:

> Culvert Replacement Sites The proposed project activities at six culvert sites would result in the loss of 0.28 ~~0.26~~ acres of habitat. Tree stem loss totals 118 ~~108~~, including 75 ~~74~~ native and 43 ~~34~~ non-native trees, with most (111 ~~118~~) in the small size class. Table 14 summarizes the impacts upon riparian habitat by individual culvert site.

Page 83, the third paragraph is revised as follows:

> Project impacts to riparian habitat from vegetation removal, and proposed mitigation acreages are provided in Table 17. Table 18 summarizes mitigation requirements by reach. Mitigation acreage is calculated by applying a ratio of 1:1 to low quality habitat, 2:1 to medium quality habitat, and 3:1 to high quality habitat. Using these ratios, the total acreage of mitigation proposed is 2.35 ~~2.31~~ acres. The implementation of the mitigation described herein would reduce the project impacts to stream-associated habitats to a less-than-significant level.

Page 84, Table 17 is revised as follows:

TABLE 17
IMPACTS SUMMARY AND MITIGATION REQUIREMENTS

Site	**Riparian Habitat Impacts (Area-Square Feet)**			**Total Impact Area**		**Mitigation**	
	Low Value	**Medium Value**	**High Value**	**Square Feet**	**Acres**	**Square Feet**	**Acres**
West Edith Avenue	16,001	4,058	150	20,209	0.46	24,567	0.56
Foothill College	2,785	4,535	10,096	17,416	0.40	42,143	0.97
Culvert Sites	2,924	9,367 ~~8,467~~	125	12,416 ~~11,516~~	0.28 ~~0.26~~	22,033 ~~20,233~~	0.51 ~~0.46~~
Erosion Repair Sites	8,423	2,671	0	11,094	0.25	13,765	0.32
Total	**30,133**	**20,631** ~~**19,731**~~	**10,371**	**61,135** ~~**60,235**~~	**1.40** ~~**1.38**~~	**102,508** ~~**100,708**~~	**2.35**[1] ~~**2.31**~~

Page 84, the first paragraph is revised as follows:

> The total mitigation area to be provided therefore totals 2.64 ~~2.6~~ acres. As described below, five ~~six~~ *mitigation sites have been identified that could accommodate* 2.64 ~~2.6~~ acres of high quality riparian along Adobe Creek (see Figure 15). The five ~~six~~ together provide sufficient mitigation acreage ~~more acreage (over 3.5 acres) than the project requires.~~ Table 19 lists the acreages available at each site. .... A conceptual description of the five ~~six~~ mitigation sites is provided below. A final mitigation and monitoring plan for the sites would be developed during the regulatory permitting process.

Page 85, Table 18, Impacts Summary and Mitigation Requirements by Reach, has been revised. See Final EIR (Page 83) for revised Table.

Page 86, Figure 15, Mitigation Sites Location Map, has been revised. See Final EIR (Page 85) for revised Figure.

---

[1] This total does not include the 0.29 acres of mitigation for use as a mitigation bank for routine maintenance.

Page 87, Table 19 is revised as follows:

TABLE 19
MITIGATION SITE ACREAGES

Site	**Area (acres)**
Foothill Expressway	0.4
West Edith Avenue Channel Modification	0.3
West Edith Avenue Park	0.7
Foothill College Channel Modification	0.6
Adobe Creek Estates	0.6 ~~0.5~~
~~Trust for Hidden Villa~~	~~1.0~~
Total	**2.6 ~~3.5~~**

Page 94, eighth and ninth paragraphs are revised as follows:

> Location This site is located in Reach 15 between Stations 593 + 00 and 602 +00. It runs parallel to Moody Road extending for 600 feet west and 300 feet east from Adobe Creek Lodge Road (see Figures 24 and 26).

Page 98, Figure 24, Plan View of Adobe Creek Estates Mitigation Site (West), has been revised. See Final EIR (Page 96) for revised Figure.

Page 99, the third paragraph is revised as follows:

> Mitigation Site Configuration The site has at least 0.6 ~~0.5~~ acres available for mitigation. Figure 25 shows the site in typical cross section. Most of the planting (0.4 acres) would occur on the side slopes. Small areas (totaling 0.07 ~~0.7~~ acres) between existing canopy at the top of the left bank could also be planted.

Page 99, the sixth through tenth paragraphs are deleted as follows:

~~Trust for Hidden Villa Mitigation Site (Reach 16, Station 619 + 50)~~

~~Location This site is located in Reach 16, just upstream of Murietta Lane, between Stations 618 + 00 and 622 + 00 (see Figure 26)~~

~~Ownership This site is the property of the Trust for Hidden Villa. The District has contacted officials at the Trust for Hidden Villa and they were receptive to the idea of allowing project mitigation to this location. The site already has an open space easement with the Midpeninsula Regional Open Space District. The District would be required to obtain all necessary conservation easements or other legal permission required prior to use of the site as a mitigation area.~~

~~Existing Conditions The site includes cleared lands that are located on both sides of the creek, on high terraces situated 10-15 feet above the channel bottom. The creek itself is heavily vegetated with native trees (primarily willows) and comprises high quality riparian habitat. The proposed mitigation areas are vegetated with non-native grasses, star thistle (Centaurea solstitialis), and various ruderal species.~~

~~Mitigation Site configuration The site comprises approximately 1.0 acre. Figure 27 shows the site in typical cross section. All revegetation areas would be contiguous with the existing riparian habitat.~~

Page 100, Figure 25, Cross-Section of Adobe Creek Estates Mitigation Site (West), has been revised. See Final EIR (Page 98) for revised Figure.

Page 101, Figure 26, Plan View of Adobe Creek Estates Mitigation Site (East), has been revised. See Final EIR (Page 99) for revised Figure.

Page 102, Figure 27, Cross-Section of Adobe Creek Estates Mitigation Site (East), has been revised. See Final EIR (Page 100) for revised Figure.

Page 103, the first paragraph is deleted as follows:

Site Preparation The site would require no grading to be suitable for planting. All non-native vegetation would be cleared and grubbed from the site, and native trees and shrubs retained. Some miscellaneous debris may need to be cleaned up from the creek bank.

Page 105, the fourth paragraph is revised as follows:

Mixed Riparian Forest Habitat. There is an increase in this habitat type's acreage in the post-project column due to the 0.9 acres of riparian mitigation that will be installed at the West Edith Avenue and Foothill College project sites. An additional 1.70 ~~1.52~~ acres of riparian habitat is proposed at the Edith Park, Foothill Expressway and Adobe Creek Estates ~~Hidden Villa~~ mitigation areas, which will ultimately bring the project's total riparian habitat acreage to 2.75, for a net gain of 1.82 acres. However, it must be understood that the mitigation sites will not provide full riparian habitat value for at least 15-25 years after site planting when they would provide habitat values equal to or greater than the areas originally impacted.

Page 106, the following text is added as the fifth paragraph:

> **Trees.** The following tree protection measures should minimize impacts to these redwoods and other trees potentially impacted by the project: 1) Where feasible, prior to project construction at the site, measures such as orange safety fencing shall be installed around the dripline of the trees and maintained until completion of construction at the site. This measure will protect trunks from physical impact and avoid root severance and compaction. 2) Where fencing is not feasible, trunks shall be wrapped with furniture padding or be otherwise protected from equipment damage. If roots greater than 2" in diameter are damaged or cut, an arborist shall be consulted. Roots should be cut cleanly and smoothly without crushing, shattering, or tearing. Limbs greater than 2" in diameter and subject to removal shall be pruned just outside the branch collar. In addition, the trunks of the redwoods in question are located downstream of the transition structure that will be installed. Thus, the trunks will be outside the transition zone of impacts. Nonetheless, some roots and limbs may be trimmed during construction.

Page 112, the sixth paragraph is revised as follows:

> During the initial Phase I survey in September 1993, a strong sewage odor was detected within Reach 8 near Morningside Drive (Station 468 + 00). During a subsequent inspection in October 1993, a 6-inch partially buried pipe was observed on the left bank of Adobe Creek, draining liquid into the creek bed. A sample of this liquid was collected and analyzed for fecal coliforms. The fecal coliform test was positive, which indicated the presence of septic leachate. Though fecal coliform are also present in the feces of warm blooded animals, the strong sewage odor observed in combination with the outfall pipe and knowledge of a septic leach field directly up the bank, confirm that the leachate was septic in nature.

Page 114, the following text is deleted from the first paragraph:

> ~~The site would be periodically inspected by the District for signs of leachate discharge and for sewage odor, and corrective actions would be pursued, as required.~~

Page 114, the following text is added to the end of the fifth paragraph:

> The 55-gallon drums are leftovers from horse show days at The Trust for Hidden Villa, when they were used for horse jumping. The Trust for Hidden Villa intends to remove all of the debris there and in the landfill when they have raised the funds to do so.

Page 116, the first paragraph is revised as follows:

> As part of this study fecal coliforms were identified in septic leachate discharged from a pipe into the creek bed near Morningside Drive for enforcement action (Station 468 + 00). This issue was ~~addressed and corrected by~~ referred to the County Health Department.

Page 116, the third paragraph is replaced as follows:

> The District plans to sample and analyze those soils to be excavated in order to determine the chemical nature of the soils to be generated by the construction project and to determine disposal and reuse options. This is necessary because local Class III landfills have specific requirements as to the chemical composition of acceptable soils.

Page 116, the third mitigation measure is replaced as follows:

Prior to construction, soil profiling will be conducted to characterized the Adobe Creek sediments and embankment soils to be excavated in order to determine soil reuse and disposal options

Page 118, the third full paragraph is revised as follows:

- In the event that prehistoric or historic resources (human remains, artifacts, concentrations of shell/bone/rock/ash, dishware) are encountered during construction or maintenance activities, all construction and maintenance within a fifty meter radius of the find would be stopped, the District notified, and an archaeologist retained to examine the find and make appropriate recommendations. The District will follow the archaeologist's recommendations to reduce impacts to cultural resources to a less-than-significant level.

Page 119, the following text is added after the fourth paragraph:

EL CAMINO REAL (REACH 1)

The existing visual character of the culvert site and upstream transition is that of a narrow concrete lined channel. This concrete and sack concrete slope protection lined channel extend for approximately 200 feet upstream. There are some mature trees mostly planted at the top of the bank which provide some shading of the channel. At the top of both banks, there is a chain link fence for safety reasons.

Page 120, the first paragraph is revised as follows:

The ~~two~~ three areas of the project that would undergo the greatest visual changes are located at West Edith Avenue (Reach 5), ~~and~~ at Foothill College (Reach 11), and at El Camino Real (Reach 1). Figures 29 and 30, respectively, present photo-simulations of the proposed modifications at West Edith Avenue and at Foothill College.

Page 120, the following text is added after the fifth paragraph:

EL CAMINO REAL (REACH 1)

The project proposes to replace the existing culvert and rebuild the upstream transition between the culvert and the creekbed. The existing upstream concrete transition will be replaced with a gabion transition, which will be extended upstream to stabilize the existing maintenance ramp on the left (east) bank. The proposed culvert will be designed in conformance with the City of Palo Alto's "Palo Alto Gateway" plan (the details of which are still under development by the City of Palo Alto). Under existing conditions, the first 200 feet upstream of the culvert is mostly *lined with concrete. In an effort to reduce impacts at this location, District engineers redesigned* the project to decrease the original culvert replacement impact area. The proposed gabions will include planting "pockets" and areas at the top of bank that can be planted with riparian species. For these reasons, the project is not expected to result in significant visual impacts at the El Camino Real culvert.

Page 123, the second sentence of the last paragraph is revised as follows:

> Traffic in the existing six ~~four~~ lanes would be temporarily rerouted to the space currently occupied by two lanes, the median, and the parking lane along one side of El Camino Real.

Page 127, the following text is added to the end of the second paragraph.

> The noise levels listed in Table 25 assume that the receiver is 25 feet from the construction equipment. It should be noted that there is a 6dB reduction in noise level for every doubling of distance. For example, at 25 feet from a backhoe/gradeall, the typical noise level would be 78-99 decibels. At 50 feet from the same backhoe/gradeall, the noise level would be 72-93 decibels, and at 100 feet from the backhoe/gradeall, the noise level would be 66-87 decibels.

Page 146, Section VII, Scoping and Coordination With Agencies and the Public, has been modified to add a Brief description of the Public Hearing and inclusion of comments and responses on DEIR in Appendix H.

The Tree Stem Impact Tables in Appendix C have been revised to add additional impacts at El Camino Real. See Final EIR for revised Appendix.

The Species Table in Appendix C has been revised. See Final EIR for revised Appendix.

Appendix H, Response to Comments on the Draft Environmental Impact Report has been added.

State Clearing House
1400 Tenth Street, Room 121
Sacramento, CA 95814

Mr. Keyvan Mughbel
Regional Water Quality Control Board
2101 Webster Street
Oakland, CA 94612

Ms. Margaret Roper
Fisheries Biologist
California Department of Fish and Game
P.O. Box 1723
Gilroy, CA 95021-1723

Mr. Keith Anderson
Senior Fisheries Biologist
California Department of Fish and Game
20 Lower Ragsdale Drive, Suite 100
Monterey, CA 93940

Mr. Carl Wilcox
California Department of Fish and Game
P.O. Box 47
Yountville, CA 94599

Mr. Dante Maragni
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404

Mr. Mike Monroe
United States Environmental Protection Agency
5 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Mike Aceituno
Wetlands Branch Chief
United States Fish and Wildlife Service
2800 Cottage Way, Room E-1823
Sacramento, CA 95825-1846

Mr. Calvin Fong, Regulatory Branch
United States Army Corps of Engineers
San Francisco District
333 Market Street
San Francisco, CA 94105-2197

State Lands Commission
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825-8202

County of Santa Clara
Planning Department
70 West Hedding Street
San Jose, CA 95110

Nancy Bernardi, President
Guadalupe-Coyote Resource Conservation District
888 North First Street, Room 203
San Jose, CA 95112

Midpeninsula Open Space District
330 Distel Circle
Los Altos, CA 94022

John Schulze
Foothill Community College
12345 El Monte Road
Los Altos Hills, CA 94022

Mr. Bruce Bane
City of Los Altos
One North San Antonio Road
Los Altos, CA 94022-3088

Los Altos Main Library
13 S. San Antonio Road
Los Altos, CA 94022-3088

Mr. Jeff Peterson
Town of Los Altos Hills
26379 Fremont Road
Los Altos Hills, CA 94022

Joe Teresi
City of Palo Alto
P.O. Box 10250
Palo Alto, CA 94303

City of Palo Alto Main Library
Sylvia Baker (Reference Section)
1213 Newell Road
Palo Alto, CA 94303

City of Palo Alto Terman Park Library
Marilyn Gillespie
661 Arastradero Road
Palo Alto, CA 94303

G.J. Battaglini, District Office Chief
Caltrans District 4
Maintenance Services & Permits
P.O. Box 23660
Oakland, CA 94623-0660

California Water Service
1555 Miramonte
Los Altos, CA 94022

Purissima Hills Water District
26375 Fremont Road
Los Altos Hills, CA 94022

Mr. Darwin Helmuth
San Francisco PUC
425 Mason Street - 4th Floor
San Francisco, CA 94102

Ms. Judith Steiner
Trust for Hidden Villa
26870 Moody Road
Los Altos Hills, CA 94022

Curt Riffle
Los Altos Environmental Task Force
469 Casita Way
Los Altos, CA 94022

Environmental Design Committee
c/o Town of Los Altos Hills
26379 Fremont Road
Los Altos Hills, CA 94022

Dan Stephens
H.T. Harvey & Associates
P.O. Box 1180
Alviso, CA 95002

Ms. Judy Shanley
David J. Powers & Assc.
1885 The Alameda, Suite 204
San Jose, CA 95126

Mr. Larry Johman
Western Waters Canoe Club
40 Redding Road
Campbell, CA 95008

Mr. Craig Breon
Environmental Advocate
Santa Clara Valley Audubon Society
22221 McClellan Road
Cupertino, CA 95014

Ms. Libby Lucas
Guadalupe-Coyote Resource Conservation
District
174 Yerba Santa Avenue
Los Altos, CA 94022

Ms. Ann Coombs
League of Women Voters
65 North Avalon Drive
Los Altos, CA 94022

Ms. Julia Bott
Chapter Director
Loma Prieta Chapter Sierra Club
3921 East Bayshore Road
Palo Alto, CA 94303

Ms. Trish Mulvey
Clean South Bay/Friends of the Estuary
527 Rhodes Drive
Palo Alto, CA 94303

Ms. Dena Mossar
Santa Clara County Creek Coalition
1024 Emerson
Palo Alto, CA 94301

Ms. Jorie Rose
Executive Director
Peninsula Conservation Center Foundation
3921 East Bayshore Road
Palo Alto, CA 94303

Ms. Linda Elkind
Committee for Green Foothills
14 Hawk View
Portola Valley, CA 94028

Karen Cotter
Coyote Creek Riparian Station
P.O. Box 1027
Alviso, CA 95002

Ms. Deborah C. Barrett
Friends of Calabazas Creek
19672 Stevens Creek Blvd., Suite 119
Cupertino, CA 95014

Mr. Richard E. Bartlett
Rancho Laureles Preservation Assc.
1138 Laureles Drive
Los Altos, CA 94022

Sara Granzotti
GreenAcres I Improvement Association
666 Glenbrook Drive
Palo Alto, CA 94306-4306

Mr. Camas Hubenthal
Committee for Green Foothills
3921 East Bayshore Road
Palo Alto, CA 94303

Mr. Vince Vargas
7 Cypress Court
Los Altos, CA 94022

Ms. Pat Milar
400 Cypress Drive
Los Altos, CA 94022

Mr. Didier Rogez
411 Cuesta Avenue
Los Altos, CA 94024

Richard Stowe
c/o Daphne Small
Foothill College
12345 El Monte Road
Los Altos Hills, CA 94022

Susan Frank
Palo Alto Chamber of Commerce
325 Forest Avenue
Palo Alto, CA 94301

Ed Stewart
Watershed Manager
San Francisco Water Department
P.O. Box 730
Millbrae, CA 94030

LETTER ONLY:

Clyde Noel
Business Editor
Los Altos Town Crier
138 Main Street
Los Altos, CA 94022

New Cabaña Developer:
Carrasco & Associates
120 Hamilton Avenue
Palo Alto, CA 94301

MINUTES, SANTA CLARA VALLEY WATER DISTRICT, BOARD OF DIRECTORS MEETING, DECEMBER 12, 1996

The minutes of the Santa Clara Valley Water District, Board of Directors meeting on December 12, 1996 which included a public hearing on the Adobe Creek Watershed Planning Study DEIR are provided on the following pages.

MINUTES
SANTA CLARA VALLEY WATER DISTRICT
BOARD OF DIRECTORS MEETING
December 12, 1996

(Paragraph numbers coincide with agenda item numbers)

An adjourned regular meeting of the Board of Directors of the Santa Clara Valley Water District was held in the Multipurpose Room at the Hillview Community Center, 97 Hillview Avenue, Los Altos, California, at 7:30 p.m. on December 12, 1996. *Adjourn Reg Mtg*

1. Board members in attendance were Directors T. Estremera, R. W. Gross, J. J. Lenihan, and L. Wilson, constituting a quorum of the Board. Chairperson Judge, Vice Chairperson Sanchez, and Director R. C. Kamei were absent. *Pres Bd*

Staff members in attendance were A. C. Bennetti, D. R. Ely, L. L. Keller, T. A. Neudorf, R. Tally, P. K. Whitlock, K. W. Whitman, S. M. Williams, and S. M. Wilson. *Staff*

2. Acting Chairperson Lenihan opened the public hearing on the environmental impacts of the District's proposed flood control plan for Adobe Creek (El Camino Real to Upstream Moody Road). A copy of the report is on file in the District Library. *Opn Pub Hrg*

Chairperson Lenihan explained that his term is ending in 1996 after 36 years as a director. He shared that it has been an honor to serve the constituents of District 5 for all of those years.

Chairperson Lenihan welcomed everyone attending the public hearing. He stated that the purpose of the hearing was to receive comments on the draft Environmental Impact Report (EIR) for the proposed flood control project on Adobe Creek. He explained that no decision on the project would be made at the public hearing. Three public meetings and numerous neighborhood meetings were held in the community to discuss the flood problems and describe the proposed project. Alternative solutions and their environmental impacts have been included in the report. As a result of the public's input, the District did make revisions and modifications to the project. The District believes that the project proposed has minimized, to the extent possible, impacts to vegetation and adjacent property owners. He explained that the planning study has been out for 52 days and oral statements and additional comments are being accepted at this hearing. Comments on the draft EIR will be specifically addressed in the final EIR, must be in writing, and would be accepted through January 3, 1997. The Board will make a decision whether to proceed with the project after that date based on the written and oral comments received. All of those making comments on the draft EIR will have received responses and will be notified when the Board will take further action.

Ms. P. Kay Whitlock, Assistant General Manager, explained the process for the public hearing stating that staff would give a detailed description of the proposed construction project including the environmental assessment. Following that, Ms. Whitlock indicated that she would enter into the record any written comments received to date. After those comments, staff will open the meeting for comments from the audience. In the interest of time, questions will be answered if they can be answered in a straightforward manner; if there are lengthy comments, they may be handled separately. Ms. Whitlock explained that all significant environmental comments will be responded to in the final EIR.

APPROVED
FEB - 4 1997

Mr. Scott M. Wilson, P.E., Associate Civil Engineer, Water Resources Management, using a slide projector, reviewed the existing conditions along Adobe Creek and described the proposed flood control project in the Engineer's Report.

Mr. Terrence A. Neudorf, Environmental Planner, Water Resources Management, reviewed the environmental assessment and described the impacts of the project and mitigation proposed for those impacts. Mr. Neudorf explained that there was a team of District engineers and consulting biologists who worked together and went over several alternatives to the plan to minimize or avoid impacts. Efforts were made to redesign the project to avoid vegetation impacts where there was significant vegetation. He further reported that the drop structures are all fish friendly. The project also contains vortex weirs designed to provide fish pools.

Using a slide projector, Mr. Neudorf showed the areas where mitigation would occur to avoid environmental impacts. He explained that the District is currently preparing an environmental document and permit on the Districtwide maintenance program. When the maintenance program mitigation is finalized, the maintenance for this project will be folded in.

Ms. Whitlock read into the record letters received from various citizens: Mr. Thomas Paoli, letter dated November 26, 1996; Green Acres, letter dated December 8, 1996; Mr. Ed McQuiston, letter dated December 7, 1996; and, Carrasco and Associates, letter dated December 9, 1996.

Appear R Stutz

Mr. Robert E. Stutz, 25130 Elena Road, Los Altos Hills, questioned how much more the water table would be lowered past the El Monte/Moody/Elena corner. Staff indicated that the answer to that question would appear in the final document.

Appear C Casto

Ms. Chris Casto, 1720 Holt Avenue, Los Altos, a member of the Los Altos Environmental Committee, encouraged the Board to proceed with the project. Ms. Casto stated that the committee was pleased that the project in Los Altos constitutes what was asked for in the General Plan stating that it maintains that the creeks maintain their natural state while ensuring public safety and preserving a valuable, natural resource. She asked staff to explain the difference in the new maintenance easement that is written in the report vs. the old maintenance easement. She expressed concern that the revegetation mitigation in gabions would not happen as soon as was indicated. She also expressed concern about the ten live oak trees that are scheduled to be removed and requested that staff relook at that issue.

Mr. Wilson explained that the difference between the old maintenance easement was a standard easement that can be used for construction and maintenance and the new maintenance easement is a maintenance easement only. This was done at the request of the property owners.

An unidentified citizen in the audience questioned if there was an easement width requirement. Mr. Wilson explained that the easement language does not speak to the width of the easement, but to what the easement can be used for. The width of the easement is based on need due to erosion, height of the bank, etc. It would be site specific.

Appear J Teresi

Mr. Joe Teresi, City of Palo Alto (City), thanked District staff for working with the City over the last several years in preparation of the planning study and said the City looks forward to continued work with District staff in development of the actual construction document. The City took the document to its Planning Commission last month and will be taking it to its City Council on December 16, 1996 for final comments. The City is very interested in eliminating the flood hazard from the undersized culvert at El Camino Real. He noted that the City was concerned about the impacts to adjacent businesses with the replacement of the culvert at El Camino Real.

Mr. Bob Nevin, 189 Marvin Avenue, Los Altos, expressed concern that the report stated that replacing the culvert at Yerba Buena would not reduce flooding and that any work done to the culvert would be delayed until another agency shares the cost. He stated that, in his opinion, the channel immediately below that culvert would not carry the one percent flood. *Appear B Nevin*

Mr. Wilson stated that the response to that comment would be in the response document and that staff would contact Mr. Nevin.

Mr. Vince Vargas, 7 Cypress Court, Los Altos, stated that his back boundary is Adobe Creek. He expressed concern with the slides resulting from crumbling retaining walls built over a number of years and asked how they would be replaced. He complimented District staff on working with the neighbors on Reach 5 over a period of three years. He stated that in looking at alternatives that were acceptable to the neighbors, a number of the neighbors were very much in favor of the work that had been done and endorsed the plan as proposed. He expressed concern with the developer that appeared at a previous Board meeting and told the Board an easement would not be granted unless the Board moved to proceed with the Reach 5 improvements. He questioned the status of that easement. He also questioned the timeframes involved. He stated that the City of Los Altos and the Town of Los Altos Hills, as well as himself, appealed that Reach 5 be granted a priority status so that the work could be done this next year.

Mr. Wilson responded that the report shows the first construction in the Summer of 1998.

Ms. Whitlock reported that the recommendation to move Reach 5 construction forward would be before the Board as a consideration.

Mr. Frank Frankhauser, 1060 Laureles Drive, Los Altos, questioned what could be done in the meantime concerning erosion. *Appear F Frankhauser*

Mr. Tom Schaeffer, Friends of Calabazas Creek, stated that the group's purpose was to preserve the environmental quality along Calabazas Creek. He stated that he was pleased with the District's recognition of the environmental concerns of the community. *Appear T Schaeffer*

Mr. Larry J. Gardner, 576 Van Buren, Los Altos, expressed concern with the erosion but also questioned why there was such a large encroachment on his property. *Appear L Gardner*

Mr. Wilson stated that he would address this personally with Mr. Gardner after the meeting.

Mr. Paul Lippe, 9 Cypress Court, Los Altos, brought forward the issue of development of a 5.2-acre lot across from the creek on the Los Altos Hills side of Adobe Creek. He reported that the lot could get developed soon. He said he felt it was undesirable, from everyone's point of view, to have multiple construction, and questioned whether the two boards involved could manage the timing of the construction in such a way that the creek was completed first. He also questioned whether the plans for development are coordinated since water flow from the development would affect the water flow of the creek. *Appear P Lip*

Ms. Whitlock stated that staff could discuss with him after the meeting how the District handles construction sequencing. She noted that the District does not have that detail laid out.

Mr. Lippe added that he felt the District had an outstanding plan and complimented staff on the energy the District is putting into such a thoughtful plan.

Mr. Jon Small, 577 Van Buren Street, Los Altos, questioned the sources of funding for the project and whether there would be special assessments to individual homeowners; and, if so, how the assessments would be determined. *Appear J Small*

Mr. Randall R. Talley, Supervising Engineer, Water Resources Management, explained that funding presently is based on assessments already in place. There are no additional assessments for this particular project.

Mr. Bruce Bane, City of Los Altos, complimented staff on their work on the alternatives. He stated that the City of Los Altos was looking forward to the improved maintenance activities and improved access to the creek. *Appear B Bane*

Ms. Doris Stoessel, 490 Raquel Court, Los Altos, questioned whether the new maintenance easement would replace the existing easement that had already been granted, and whether there was a plan to replace the cement bags. *Appear D Stoessel*

Mr. Dennis R. Ely, Maintenance Planner, Operations and Maintenance, stated that he would discuss Ms. Stoessel's easement questions and the cement bag issue on that part of the creek with her following the meeting.

Mr. Thomas Olsen, 491 Raquel Court, Los Altos, asked the Board to address the erosion being created at the site of the District's maintenance area dirt ramp off Foothill Expressway between Raquel Court and Twirlwood Lane. *Appear T Olsen*

Mr. Ely explained that it was the only access point other than El Camino, and he was not certain how it would be modified. He said that it is a critical access point for the District, and that ramp would remain.

Ms. Whitlock stated that the plan would need to be reviewed relative to the erosion issue.

Mr. Tom Sherlock, 27260 Sherlock Road, Los Altos Hills, questioned what provisions were planned for drainage of the tributary along Moody Court which previously drained into a lower portion of the Hidden Villa field which has since been raised. He said that the water level in the tributary is close to road height during a normal winter and runs across Moody Road, and the current raised field blocks its drainage. *Appear T Sherlock*

Staff responded that they would contact Mr. Sherlock to address the tributary issue.

Mr. Jeff Peterson, Town of Los Altos Hills, thanked staff and reiterated the Town's desire to move up the Reach 5 construction due to the development of housing proposed. These houses will be in the seven digit price range. He explained that moving up construction of Reach 5 would minimize the impacts to this area. He further pointed out that the EIR states that the town-owned Edith Park has mitigation areas. The Town is interested in being a part of that design process since it is at the entrance from Los Altos to Los Altos Hills. He requested that *Appear J Peterson* the District work with the Environmental Design and Protection Committee staffs before getting council approval.

Ms. Whitlock stated that when the report is presented to the Board, the Board would address the scheduling for Reach 5. She also stated that the District would work with the Town of Los Altos Hills on the plans for Edith Park.

Appear
C Geschke

Mr. Charles Geschke, 220 University Avenue, Los Altos, said it was stated in the report that his property is indicated as a place for a proposed easement, and he was not notified of the fact. He questioned the process involved and what rights the District had on his property.

Mr. Wilson explained that the program to acquire easements is part of the study; and until the study is approved by the Board, property owners are not contacted about the easements. Mr. Wilson said that the proposed easement lines are for maintenance only. The decision to grant easements is always the property owner's; the District is asking for easements to be able to conduct systematic maintenance to the creek, but if the District does not have the easement, it is up to the property owner to do the maintenance.

Mr. Geschke stated that he had already granted a ¼-acre easement and did not understand why the District would want more.

Mr. Wilson stated that he would talk personally to Mr. Geschke after the meeting.

Appear
S Abraham

Mr. Sabra Abraham, 711 Casita Way, Los Altos, addressed the Board stating that there were fish in the creek and requested that the Board consider effects on current species and not worry about repopulating once they have been destroyed.

Appear
A Koontz

Ms. Anne Koontz, 65 Avalon Drive, Los Altos, and member of the Los Altos Environmental Committee, thanked the District for the process put forward with this effort, and noted there was a great deal of community involvement. She stated it was her understanding that if the District did not get the maintenance agreement, the individual property owners would be responsible for keeping their part of the creek clean. She questioned who is liable if that property creates problems downstream.

Mr. Anthony C. Bennetti, General Counsel, stated that in California there are reciprocal duties and obligations of upstream owners and lowerstream owners. He said it was not always precisely clear. However, if an owner failed to take reasonable measures to maintain property and it causes a problem either upstream by having a blockage that floods upstream property or an erosion problem that sends silt and matter downstream, that property owner could be liable on a theory of negligence.

Ms. Koontz then questioned if the District was liable if it was conducting maintenance of the creek.

Mr. Bennetti responded that when the District is responsible for maintenance, it is usually done correctly.

Ms. Koontz encouraged all of the property owners to give serious consideration to this new maintenance easement. Ms. Koontz then questioned a flood prone area relative to septic tanks wherein Ms. Whitlock stated that the issue would be addressed in the document. Ms. Whitlock explained that water quality staff were not available at the hearing to answer her question.